Phason
electronic control/systems

Supra Ware

User manual

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How to use this manual

This section is a 'quick-reference guide' of the manual. You can look at the chart on the next page to help you find what you are looking for. If you are not sure where to find something specific, look in the **Table of contents** at the front of the manual or the **Index** on page 90.

Below are some helpful suggestions.

- If you are just getting started with SupraWare, read **Chapter 2: Getting started** on page 7.
- If you need to configure your Supras, read **Chapter 3: Configuring Supras** on page 21.
- If you need to program your Supras or adjust settings (set points, growth curves, fan speeds, etc.), read **Chapter 4: Programming your site** on page 41.
- If you want to create charts or reports, read **Chapter 5: Monitoring your site** on page 73.
- If you are not sure of the meaning of a term, look it up in the **Glossary** on page 85.

Quick reference chart

SupraWare overview Manual overview Computer requirements	**Chapter 1** Starting on page 1
Power surges and surge suppression Installation SupraWare windows	**Chapter 2** Starting on page 7
Configuration instructions Zone, probe, and sensor assignments Variable and relay stage assignments	**Chapter 3** Starting on page 21
Programming instructions Group settings (set points and growth curves) Equipment settings (set points, fan speeds, and so on) Alarm settings (bias, duration, silencing, and so on)	**Chapter 4** Starting on page 41
Monitoring instructions Charts Reports	**Chapter 5** Starting on page 73
Glossary	Starting on page 85
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Limited warranty

Software

Phason Inc. (Phason) warrants for a period of 90 days from the date of purchase that the software product will execute its programming instructions when properly installed on the personal computer or workstation indicated on this package. Phason does not warrant that the operation of the software will be uninterrupted or error free. Should this software product fail to execute its programming instructions during the warranty period, the purchaser's remedy shall be to return the software CD (media) to Phason for replacement. Should Phason be unable to replace the media within a reasonable amount of time, the purchaser's alternate remedy shall be a refund of the purchase price upon return of the product and all copies.

Media

Phason warrants the media upon which this product is recorded to be free from defects in materials and workmanship under normal use for a period of 90 days from the date of purchase. Should the media prove to be defective during the warranty period, the purchaser's remedy shall be to return the media to Phason for replacement. Should Phason be unable to replace the media within a reasonable amount of time, the purchaser's alternate remedy shall be a refund of the purchase price upon return of the product and all copies.

Notice of warranty claims

The purchaser must notify Phason in writing of any warranty claim no later than 30 days after the warranty period expires.

Limitation of warranty

Phason makes no other express warranty, whether written or oral, with respect to this product. Any implied warranty of merchantability or fitness is limited to the 90 days of this written warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives specific legal rights and you may have other rights, which vary from state to state, or province to province.

Exclusive remedies

The remedies provided above are the purchaser's sole and exclusive remedies. Phason shall not be liable for any direct, indirect, special, incidental, or consequential damages (including lost profit) whether based on warranty, contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Warranty service

Warranty service may be obtained from the Phason office location indicated in the user manual or service booklet.

Service and technical support

Phason will be happy to answer all technical questions that will help you use SupraWare. Before contacting Phason, check the following:

- Read this manual for information about the feature with which you are having trouble.
- If you see an alarm message and are not sure what it means, look it up in Troubleshooting section of your **Supra user manual** and then follow the instructions for resolving the condition.
- If you are having a problem using your Supra, see if the problem is described in the Troubleshooting section of your **Supra user manual** and then follow the directions for correcting the problem.
- If you still have a problem with your Supra or SupraWare, collect the following information:
  - The serial number
  - Any messages displayed by your Supra
  - A description of the problem
  - A description of what you were doing before the problem occurred

Phason electronic control/systems

2 Terracon Place
Winnipeg, Manitoba
Canada
R2J 4G7

Phone 204-233-1400
Fax 204-233-3252
E-mail support@phason.ca
Web site www.phason.ca

Phason controls are designed and manufactured to provide reliable performance, but they are not guaranteed to be 100 percent free of defects. Even reliable products can experience occasional failures and the user should recognize this possibility.

If Phason products are used in a life-support ventilation system where failure could result in loss or injury, the user should provide adequate back up ventilation, supplementary natural ventilation, or an independent failure-alarm system. The user's lack of such precautions acknowledges their willingness to accept the risk of such loss or injury.

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Chapter 1: Introducing SupraWare

This chapter introduces you to SupraWare and the layout of this manual. Read this chapter before reading the rest of the manual.

- Introducing Supra
- About this manual
- Screen terminology
- Computer requirements

Introducing SupraWare

All of us at Phason want to welcome you to SupraWare, software that makes it easier to configure, program, and monitor multiple Supras.

SupraWare allows you to configure and monitor all your Supra controls at your site from a personal computer. You can connect up to 32 Supra controls together at distances up to 4000 feet (1220 metres).

SupraWare eliminates the need to go to a control to check settings or make changes, you can do it all from one location. SupraWare's easy-to-read displays show you control settings, temperatures, and alarms. The software maintains logs of temperatures, alarms, and system changes and includes four reports and a chart to help you analyze the information.

Features

- Convenient, easy-to-use displays
- Control and status information displays
- Enhanced data logging
- Four reports and one chart
- Backup and restore utility
- Third-party software compatibility

About this manual

This manual describes the features of SupraWare and how to use the software. It does not describe ventilation strategies or equipment (such as fans) you can connect to your Supra. You should be familiar with the following:

- Microsoft Windows™—how to perform basic Windows functions such as opening and closing windows, finding and opening files, saving and closing files, as well as using a mouse and keyboard.

- Supra hardware and equipment— for more detailed information about your Supra, see your **Supra user manual**.

Styles used in this manual

This manual uses the following styles:

- All buttons and menu commands are bolded.
  For example: Click **OK** to save the changes.

- All keyboard keys are in upper case letters. Keys that need to be pressed at the same time are separated by a +, multiple steps are separated by a comma.
  For example: Press ALT+X or ALT+F,X to close SupraWare.

- All filenames and directories are in a monospace font.
  For example: The default directory is `C:\Program Files\Phason\SupraWare`.

Hint/tip

This is a hint or tip. It contains helpful information that might make it easier for you to set up or use SupraWare.

Note

This is a note. It contains information that may help you better understand SupraWare.

A copy of this manual is also on the SupraWare installation CD. The PDF (Adobe Acrobat™ Portable Document Format) file installs in `C:\Program Files\Phason\SupraWare` during a normal installation. You can view the file by opening it using Adobe Acrobat Reader™, version 3 or higher, or by clicking any of the **Help** buttons in the software.

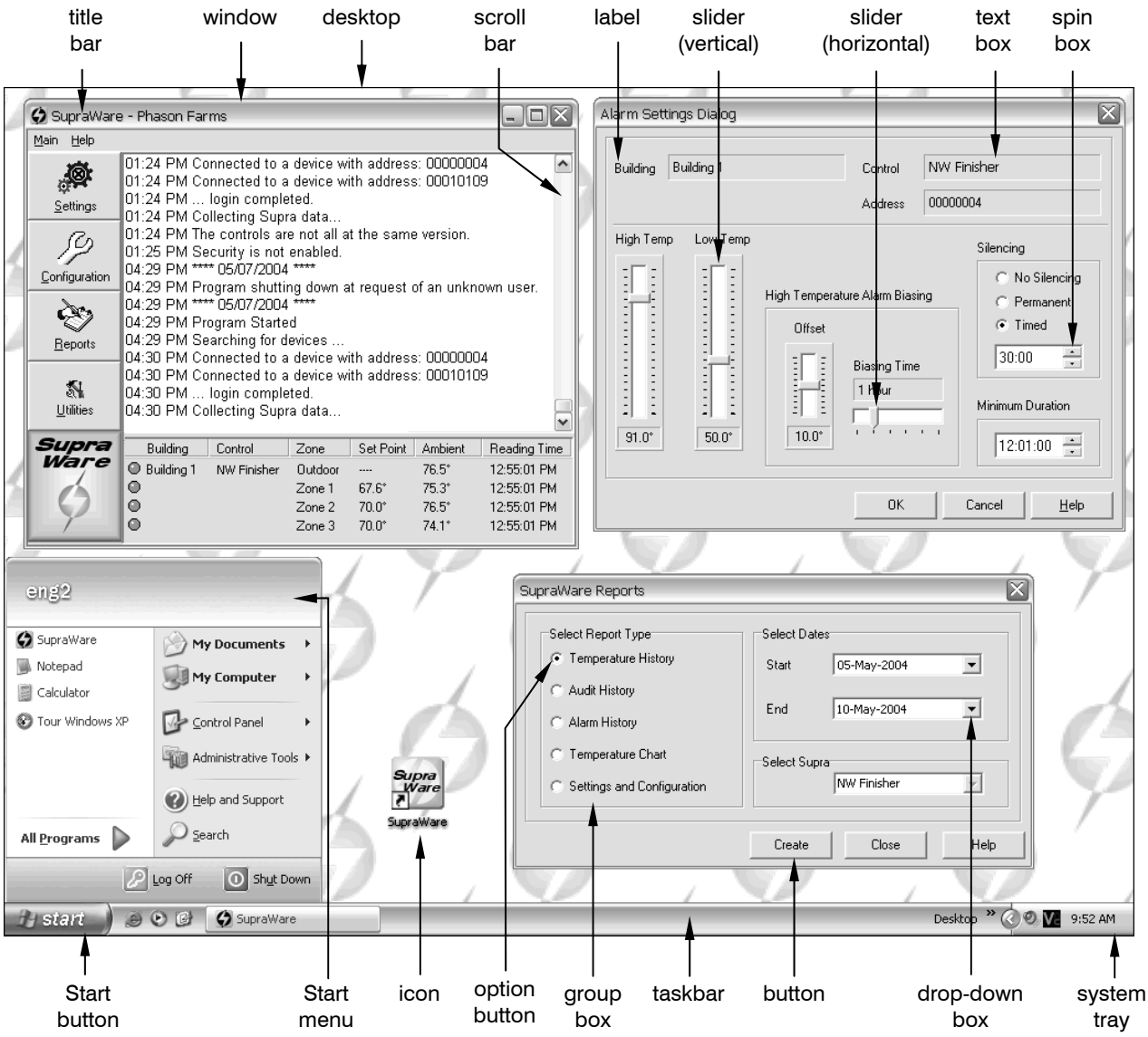
Using the mouse

This manual uses the following terms to describe mouse actions

- **Click**—press and release the left mouse button quickly
- **Select**—move your mouse pointer over the item and then click the left mouse button
- **Right-click**—press and release the right mouse button quickly
- **Drag and drop**—position the mouse pointer (cursor) over the item you want to move. Press and hold the left mouse button. With the left mouse button still pressed, move the mouse pointer to the new position (drag). When the item is in the new position, release the left mouse button (drop).

Screen terminology

The following image from a Windows XP Home™ desktop shows the terminology this manual and Phason's Customer Support use to describe the Microsoft Windows and the SupraWare software. If you are unfamiliar with any of these terms, bookmark this page so you can refer to it.



Computer requirements

These are the requirements for customers who need to purchase a new computer to run SupraWare. The computer must meet or exceed these requirements. If you have any questions, please contact Phason's Customer Support at 204-233-1400 or support@phason.ca.

Component	Requirement	Notes
Motherboard	Intel or AMD	Must have at least one serial and one parallel port available
Processor (CPU)	2.0 GHz	
Memory (RAM)	256 MB	
Monitor	17 inch	
Display adapter (video card)	32 MB	
Hard disk	40 GB	
CD-ROM/DVD-ROM	40 X (CD) 8 X (DVD)	A writeable CD-ROM or DVD-ROM is useful for backups
Floppy disk drive	Standard 3.5", 1.44 MB	
Keyboard	Standard 104-key	
Mouse	Standard 2-button	
Operating system	Windows™ XP Home	
Web browser	Internet Explorer™ version 6.0 or higher or Mozilla FireFox 1.0 or higher	Required for viewing reports
Printer	Inkjet or laser, USB or parallel	Required for printing reports Color inkjet recommended

Chapter 2: Getting started

This chapter explains how to connect Supras to your computer and install SupraWare, and provides an overview of the software.

- Understanding power surges and surge suppression
- Connecting Supras to your computer
- Becoming familiar with SupraWare

Understanding power surges and surge suppression

Power surges can be caused by external influences such as lightning or utility distribution problems, or can be caused internally by starting and stopping inductive loads such as motors.

One of the most common causes of power surges is lightning. When lightning strikes the ground, it produces an enormously powerful magnetic field. This magnetic field affects nearby power lines, which transmit a surge to any device connected to it, such as lights, computers, or environmental controls like your Supra. Lightning does not have to actually strike a power line to transmit a surge.

Surge suppression devices offer some protection from power surges. Because it is not possible to internally protect the Supra completely from the effects of power surges and other transients, we *highly recommend* that you install external surge suppression devices. For specific recommendations, see your electrical contractor. If you do not take these precautions, you acknowledge your willingness to accept the risk of loss or injury.

Getting started

This chapter explains how to connect Supras to your computer and install SupraWare. You must have already installed your Supras and connected equipment (fans, heaters, and so on) to them before connecting the controls to your computer and installing SupraWare.

There are four parts to the installation process. You must complete each step before moving on to the next.

1. Install and connect equipment to your Supras. For more information, see your **Supra user manual**.
2. Connect your Supras to your computer.
3. Install the SupraWare software.
4. Test the communication between your computer and Supras.

Connecting Supras to your computer

You can connect up to 32 Supras to your computer. Each Supra is programmed at the factory with a unique identification number that makes it easier to identify a control. To connect Supras to your computer, you need three things:

- RS-485A Converter—allows Supras to communicate with your computer.
- Termination Module (part number 210510)—installed on the last Supra on the channel, it lets the computer know that there are no more Supras after that one.
- Communication cable—unshielded twisted pair (UTP) cable, category 3 or category 5

For more information about the RS-485A Converter or Termination Module, contact your dealer or Phason.

Installing the RS-485A Converter

There are three steps to installing the RS-485A Converter:

1. Connecting the communication wiring
2. Connecting the common reference wiring
3. Connecting the RS-485A to the computer

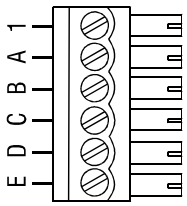
Connecting the communication wiring

Read **Connector alignment** on page 10 and **Common mistakes in communication wiring** on page 10 before connecting the communication wiring. For more information, see the installation guide for your controls.

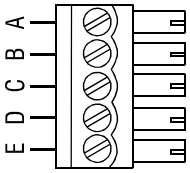
Connector alignment

The following diagrams and table show the alignment of the wiring on the communication connectors.

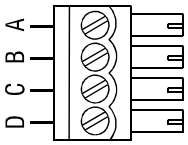
Six-pin connector



Five-pin connector



Four-pin connector



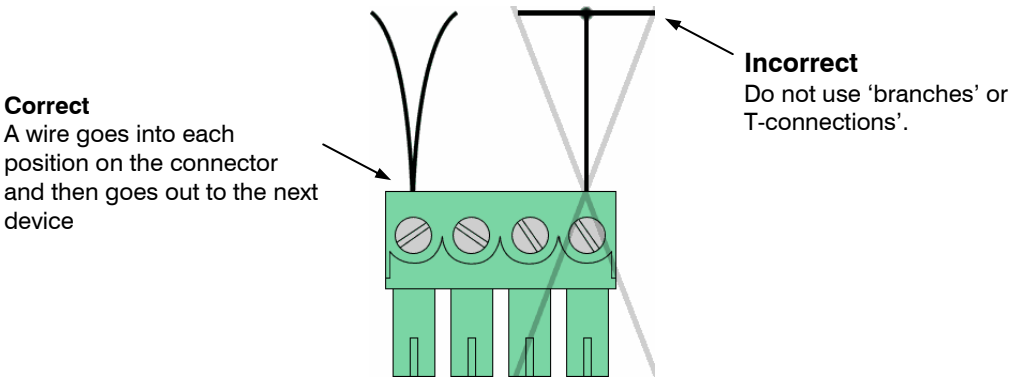
RS-485A	Wire color(s) *(see below)	First Supra	All remaining Supras
1		Not used	
A		A	A
B		B	B
C		C	C
D		D	D
E		See **Connecting the common reference wiring** below	
* The wires used for '**A**/**B**' and '**C**/**D**' must be twisted pairs.			

Common mistakes in communication wiring

The following is a list of the most common communication wiring mistakes:

- *Not using the correct type of communication cable*—the communication cable must be unshielded twisted pair cable (UTP), category 3 or category 5. Category 5 wire is recommended. Other types of wire will not work properly.
- *Not continuing the communication wiring properly*—all the devices on the communication channel must be connected in series and the wire must be continued properly from one device to the next.

  When continuing the communication wiring from one device to the next, the wires must be connected as shown below.


Correct
A wire goes into each position on the connector and then goes out to the next device
Incorrect
Do not use 'branches' or T-connections'.

- *Not terminating the last device on the communication channel*—the last device on the communication channel must have the termination module installed.

To connect the communication wiring

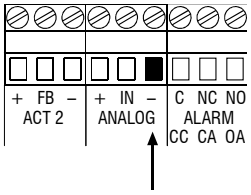
1. Connect all the devices on the communication channel in series.
2. Install a Termination Module on the last device.

Connecting the common reference wiring

The '**E**' position on the communication connector is used for 'common reference' wiring. The common reference wire helps eliminate communication problems.

Instead of using separate cable for the common reference wiring, we recommend using a wire from one of the additional twisted pairs in the communication cable.

SupraWare—from the RS-485A to each Supra



For Supras with a four-pin connector, connect a wire from the '**E**' on the RS-485A to the '**ANALOG –**' terminal on the Supra circuit board.

For Supras with a five-pin connector, connect a wire from the '**E**' on the RS-485A to the '**E**' on the Supra's five-pin connector.

Follow the same guidelines for continuing the wiring properly as shown on page 10.

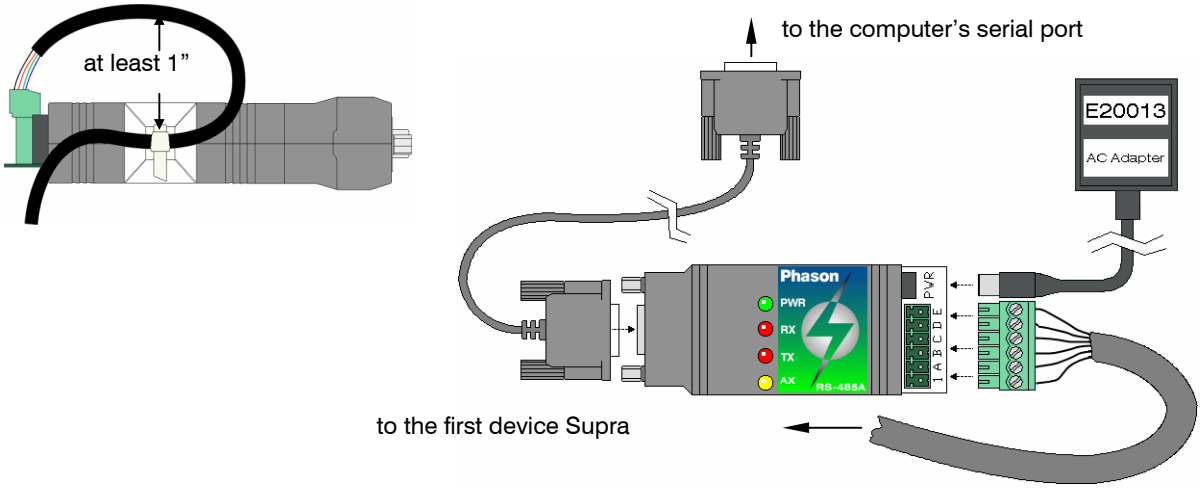
Connecting the RS-485A Converter to the computer

After connecting the communication and common reference wiring to all the devices, connect the RS-485A to the computer.

1. Plug the communication connector into the communication socket on the RS-485A.
2. Attach the adhesive mount to the side of the RS-485A.
3. Fasten the communication cable to the RS-485A using the tie-wrap. Make sure the bend in the wire is at least one inch in diameter.
4. Connect one end of the extension cable to the RS-485A and the other end to your computer's serial port.
5. Connect the AC adapter to the RS-485A.

> Use only the E20013 adapter provided with the RS-485A Converter. Other adapters can damage the converter and void the warranty.
>
> If the RS-485A Converter requires warranty service, return the adapter along with the converter.

6. Plug the AC adapter into a 115 VAC outlet.



Installing the software

SupraWare has an Installation Wizard that guides you through the installation. Make sure you have the Supras installed before installing SupraWare. For more information, see your **Supra user manual**.

To install SupraWare

1. Insert the SupraWare CD into your computer's CD-ROM drive.
   The Installation Wizard should start automatically. If it does not start automatically, find and start the file `SupraWareInstall.EXE` on the CD-ROM.

2. Follow the instructions on the screen.

Registering SupraWare

The first time you start SupraWare, you need to register the program. To register SupraWare, you need a product key. To get a product key, you need to fax, mail, or e-mail your registration form to Phason Customer Support.

You need to register SupraWare if:

- You are starting SupraWare for the first time
- You had computer problems and reinstalled SupraWare
- You add more Supras

Registering SupraWare is a two-part process:

1. Submit your registration information to Phason
2. After you receive your product key from Phason, register your version of SupraWare.

To submit your registration information

1. Start SupraWare
   The SupraWare Registration Information window appears.

If the Communication Center appears instead of the SupraWare Registration window, this means you have already registered.

If you have already registered but want to add more Supras, click the Main menu and then select Registration.

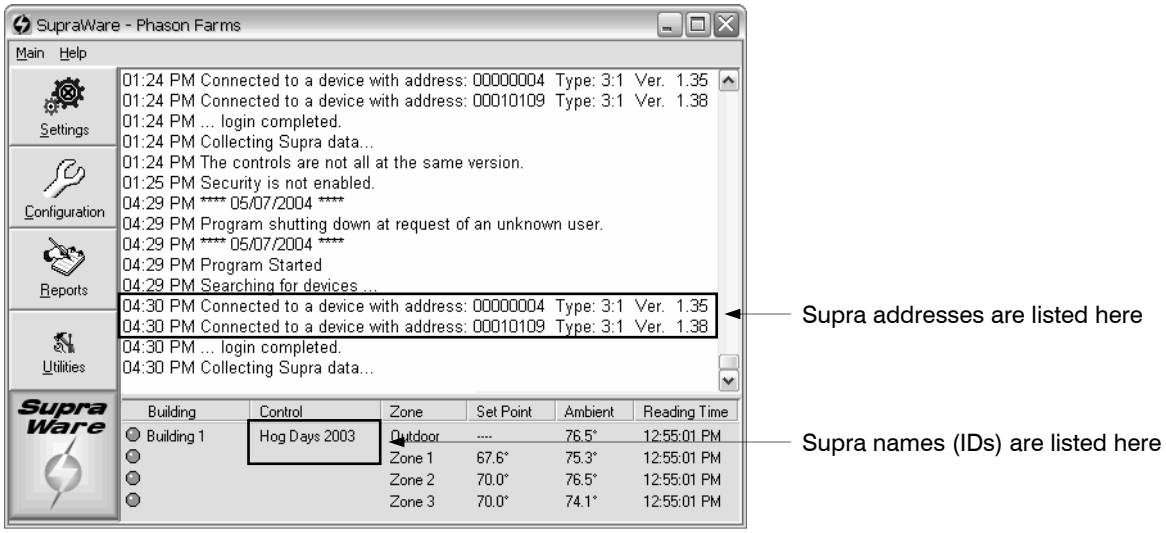
2. Type the required information in the correct fields: all fields with a *, excluding the Product Key field.
3. Click **Submit**.
   The SupraWare Registration window appears.
4. Send the registration form to Phason by mail, fax, or e-mail.
   - To print the registration form, click **Print**.
   - To e-mail the registration form, click **E-mail**. You must have a valid, working e-mail account on your computer to do this.
5. Click **Close**.
6. Click **OK** to save the information.
   Next time you start SupraWare, your information will be in the registration fields.

To register your version of SupraWare

1. After receiving your product key from Phason, start SupraWare.
   The SupraWare Registration Information window appears.
2. Beside Product Key, type the product key supplied to you by Phason.
3. Click **OK**.

Testing communication between Supras

Before you start using SupraWare, you need to make sure SupraWare is communicating with all your Supras. When you start SupraWare, the software looks for any Supras connected to the computer and displays the addresses of the Supras in the message area.


SupraWare - Phason Farms
Main Help
Settings
Configuration
Reports
Utilities
01:24 PM Connected to a device with address: 00000004 Type: 3:1 Ver. 1.35
01:24 PM Connected to a device with address: 00010109 Type: 3:1 Ver. 1.38
01:24 PM ... login completed.
01:24 PM Collecting Supra data...
01:24 PM The controls are not all at the same version.
01:25 PM Security is not enabled.
04:29 PM **** 05/07/2004 ****
04:29 PM Program shutting down at request of an unknown user.
04:29 PM **** 05/07/2004 ****
04:29 PM Program Started
04:29 PM Searching for devices ...
04:30 PM Connected to a device with address: 00000004 Type: 3:1 Ver. 1.35
04:30 PM Connected to a device with address: 00010109 Type: 3:1 Ver. 1.38
04:30 PM ... login completed.
04:30 PM Collecting Supra data...
Building
Control
Zone
Set Point
Ambient
Reading Time
Building 1
Hog Days 2003
Outdoor
Zone 1
Zone 2
Zone 3
Supra addresses are listed here
Supra names (IDs) are listed here

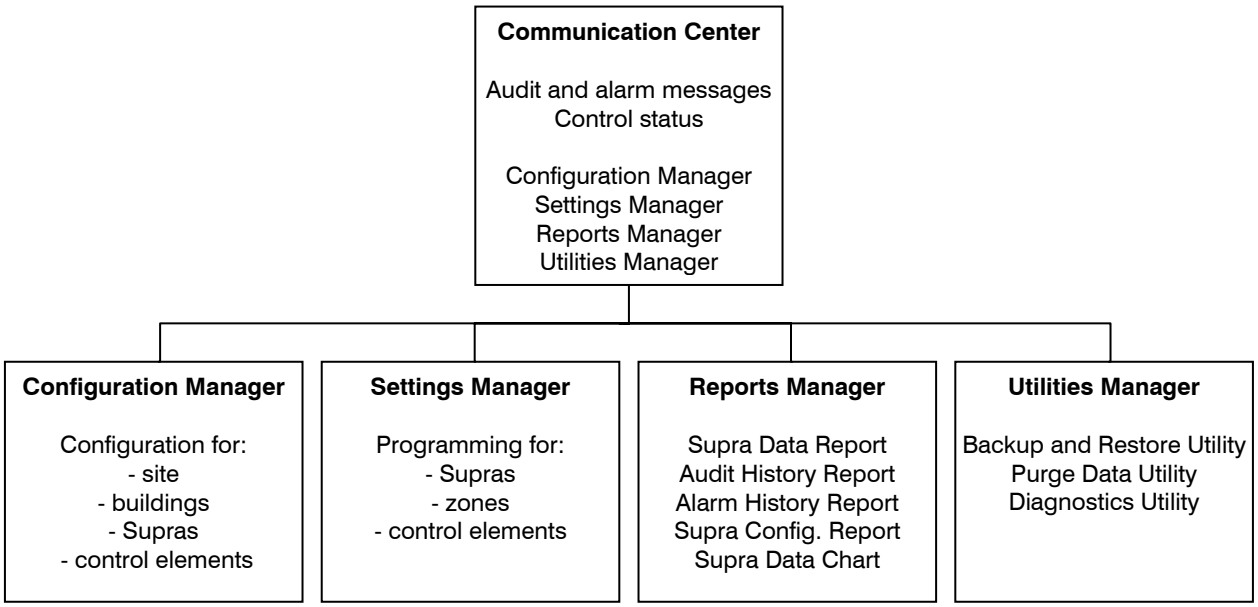
If all your Supras are listed, you can start to configure and set up the controls.

If *not* all of your Supras are listed, you need to check the communication wiring for those Supras. For more information, see **Connecting Supras to your computer** on page 9.

You can use the Supra's built-in diagnostics to test communication between Supras. For more information, see **Chapter 7** of your **Supra user manual**.

Becoming familiar with SupraWare

SupraWare has several main windows you need to become familiar with. The diagram below shows the layout of the windows and their main functions.

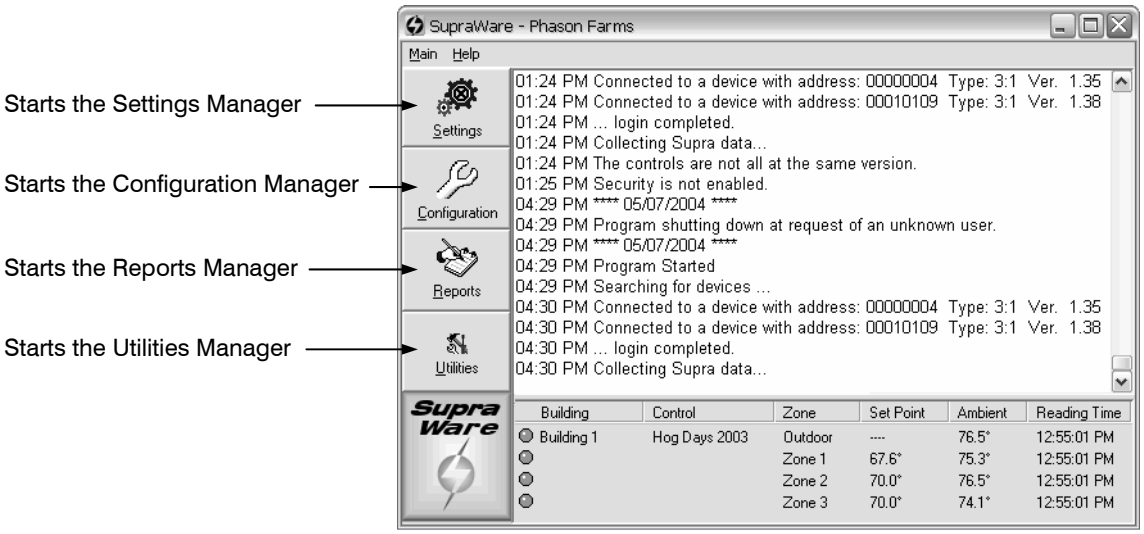


Communication Center

The Communication Center is the main window for SupraWare. From the Communication Center, you can get to all other windows. The buttons on the left side of the window open other windows of the program.

The Communication Center displays information about the system and the Supras connected to it. This information includes:

- Status information—for example, current temperatures, humidity
- Audit information—for example, system changes, configuration changes, program startup or shutdown
- Alarm information—for example, high temperature, actuator jam


Starts the Settings Manager
Starts the Configuration Manager
Starts the Reports Manager
Starts the Utilities Manager
SupraWare - Phason Farms
Main Help
Settings
Configuration
Reports
Utilities
01:24 PM Connected to a device with address: 00000004 Type: 3:1 Ver. 1.35
01:24 PM Connected to a device with address: 00010109 Type: 3:1 Ver. 1.38
01:24 PM ... login completed.
01:24 PM Collecting Supra data...
01:24 PM The controls are not all at the same version.
01:25 PM Security is not enabled.
04:29 PM ***** 05/07/2004 *****
04:29 PM Program shutting down at request of an unknown user.
04:29 PM ***** 05/07/2004 *****
04:29 PM Program Started
04:29 PM Searching for devices ...
04:30 PM Connected to a device with address: 00000004 Type: 3:1 Ver. 1.35
04:30 PM Connected to a device with address: 00010109 Type: 3:1 Ver. 1.38
04:30 PM ... login completed.
04:30 PM Collecting Supra data...
Building Control Zone Set Point Ambient Reading Time
Building 1 Hog Days 2003 Outdoor ---- 76.5° 12:55:01 PM
Zone 1 67.6° 75.3° 12:55:01 PM
Zone 2 70.0° 76.5° 12:55:01 PM
Zone 3 70.0° 74.1° 12:55:01 PM

NOTE

SupraWare must always be running. SupraWare collects, displays, and stores information only when it is running.

When SupraWare is not running, your Supras will function according to their settings, but new settings cannot be sent.

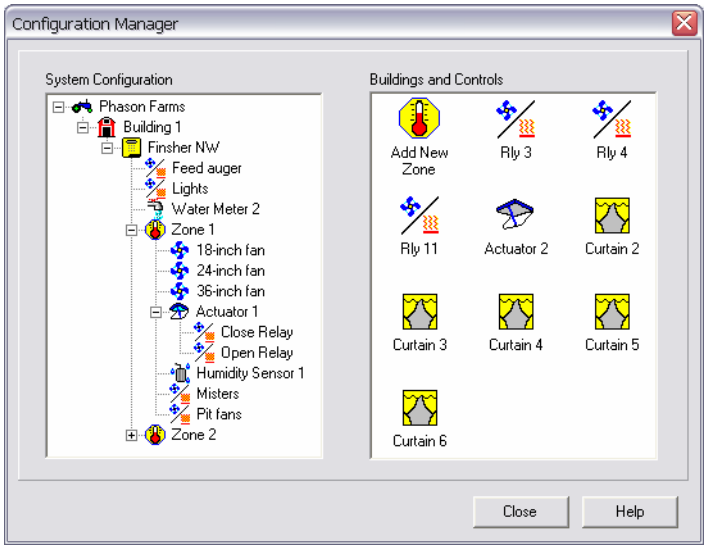
Configuration Manager

The Configuration Manager is where you create the framework for your site. From the Configuration Manager, you can:

- Configure your farm information
- Add or remove buildings, Supras, and zones
- Add, remove, or configure control elements (variable stages, relay stages, actuators, and so on)

For more information, see **Chapter 3: Configuring Supras** on page 21.

The left panel shows what is currently configured at your site. The right panel shows items (buildings, controls, zones, and control elements) that you can add to the item that is selected in the left panel. For example, if you select a Supra in the left panel, the right panel would display zones and control elements, but not buildings and other Supras.



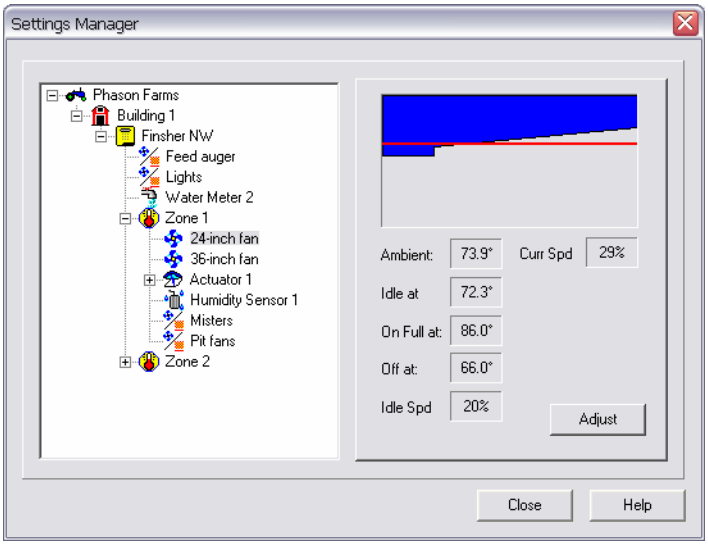
Settings Manager

The Settings Manager is where you program the settings for your site. From the Settings Manager, you can:

- Program the zones (temperature set point, growth curves, and humidity compensation)
- Program the variable and relay stages (fans, heaters, actuators, timed events, and so on)
- Program the alarm settings (high and low temperature set points, biasing, duration, and so on)

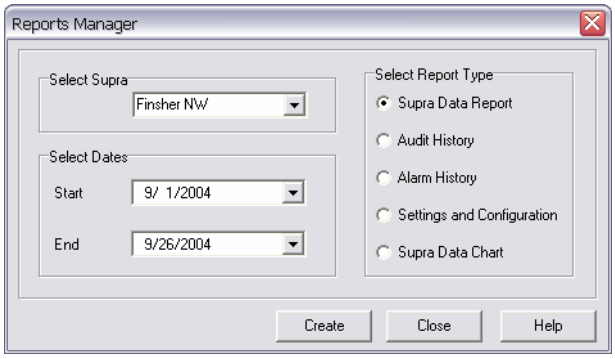
For more information, see **Chapter 4: Programming your site** on page 41.

The left panel shows what is currently configured at your site. The right panel shows the settings for the selected item from left panel. For example, if you select a variable speed fan in the left panel, the right panel would display the settings for that fan.



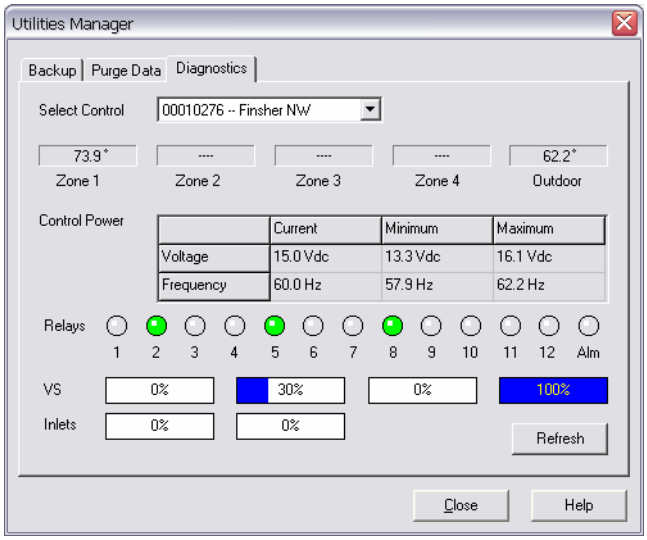
Reports Manager

The Reports Manager is where you create charts and reports.



Utilities Manager

The Utilities Manager is where you back up, restore, or purge data from SupraWare and where you can view the status of Supras.

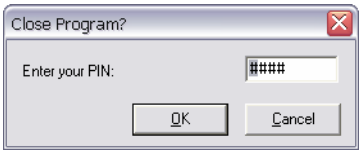


About SupraWare and security

If you have security enabled on your Supra(s), then it is also enabled in SupraWare. To enable security, you must go to each Supra and set up security and users. For more information, see your **Supra user manual**.

For security to work properly in SupraWare, you must have the PINs, users, and security settings the same on all controls. If it is not the same on all controls, security will work properly at each control, but not in the software (it allows all changes without asking for a PIN).

When security is enabled for SupraWare, each time you open one of the main windows (Configuration Manager, Settings manager, and so on), or you shut down the program, SupraWare will ask for a PIN.



To continue opening the window or shutting down the program, you must enter your correct PIN.

When you have security enabled and users enter PINs to change settings or shut down the program, SupraWare tracks the name of the user who made each change. For more information, see the **Audit History Report** on page 78.

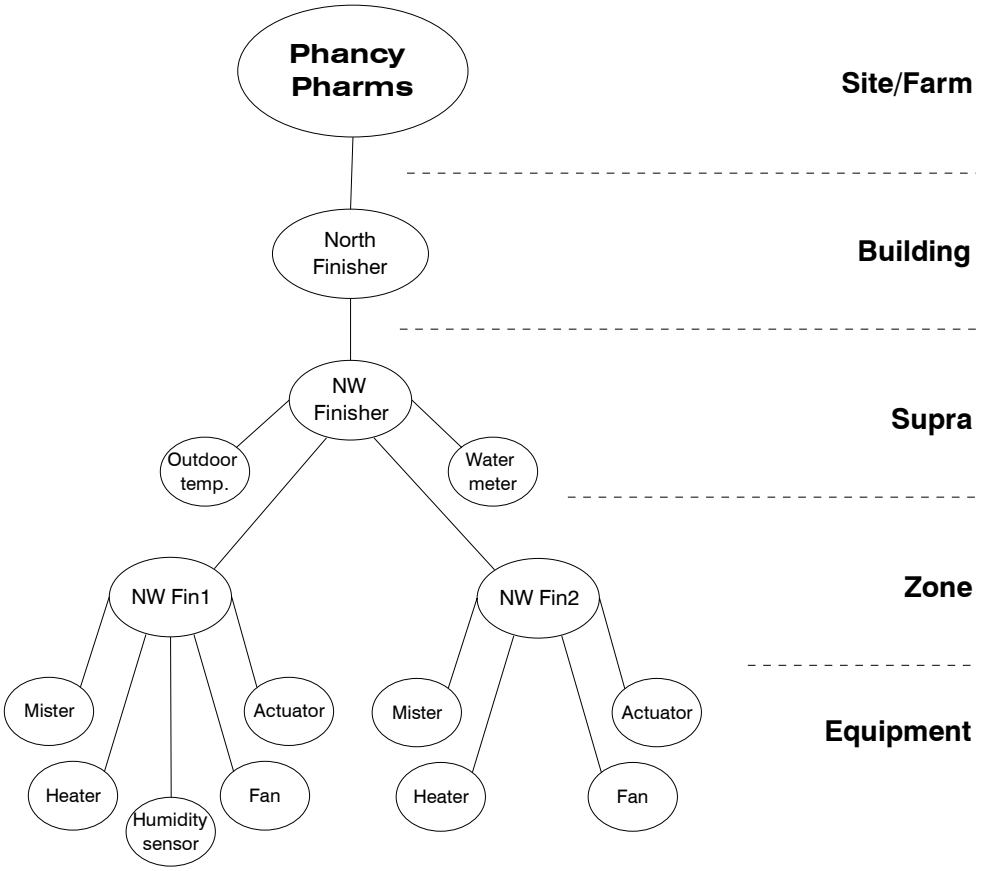
Chapter 3: Configuring Supras

This chapter explains how to configure Supras using SupraWare. Configuring Supras includes telling them which equipment is connected to each terminal.

- Understanding the structure and configuration of your site
- Configuring your site
- Configuring your Supras

Understanding the structure and configuration of your site

In SupraWare, your site is made up of several different components: buildings, Supras, zones, and equipment. This section explains how these components relate to each other.



Site

The site, or farm, is the 'top of the chain'. The site 'owns' everything beneath it.

Buildings

Buildings represent barns at your site. A site can have one or many buildings. Buildings 'belong' to the site.

Supras

Supras are the controls that operate the equipment. Supras belong to the building in which they are assigned. Supras own the zones and equipment assigned to them. Time-based elements, such as timed events and time-based duty cycles can be assigned directly to a Supra and do not need to be assigned to a zone.

Zones

Zones are sections of buildings or rooms. Each zone has a target temperature, called the zone set point. Zones can be physically separated, such as rooms, or they can be areas of one large room. For example, a large room could be divided into two zones to provide better control response.

Each Supra can have up to four zones, which belong to that specific Supra. All temperature-based elements, such as variable stages, heat-cool stages, actuator stages, and so on, must be assigned to a zone. A zone owns all the equipment that is assigned to it.

Example 1: two rooms, two zones

You have a large finisher barn that is divided into two rooms. You have a forced-air ventilation system consisting of fans and inlets. You will use one Supra to control both rooms, one zone per room. The configuration could be as follows:

Room	Zone	Ventilation stage	Supra output	Equipment
Room 1	Zone 1	Stage 1	VAR 1	Two 20-inch, variable-speed fans
Room 1	Zone 1	Stage 2	VAR 2	Three 25-inch, variable-speed fans
Room 1	Zone 1	Stage 3	RLY 1	Two 36-inch, single-speed fans
Room 1	Zone 1	Stage 4	RLY 2	One 48-inch, single-speed fan
Room 1	Zone 1	Stage 5	RLY 3	Two 48-inch, single-speed fans
Room 1	Zone 1	—	RLY 4	Gas-fired furnace
Room 1	Zone 1	—	RLY 5	Inlet actuator OPEN
Room 1	Zone 1	—	RLY 6	Inlet actuator CLOSE
Room 2	Zone 2	Stage 1	VAR 3	Two 20-inch, variable-speed fans
Room 2	Zone 2	Stage 2	VAR 4	Three 25-inch, variable-speed fans
Room 2	Zone 2	Stage 3	RLY 7	Two 36-inch, single-speed fans
Room 2	Zone 2	Stage 4	RLY 8	One 48-inch, single-speed fan
Room 2	Zone 2	Stage 5	RLY 9	Two 48-inch, single-speed fans
Room 2	Zone 2	—	RLY 10	Gas-fired furnace
Room 2	Zone 2	—	RLY 11	Inlet actuator OPEN
Room 2	Zone 2	—	RLY 12	Inlet actuator CLOSE

Example 2: one room, two zones

You have a large, single-room finisher barn. You have a forced-air ventilation system consisting of fans and inlets. You will use one Supra to control the barn. Because the room is very large, you will use two zones. The configuration could be as follows:

Zone	Ventilation stage	Supra output	Equipment
Zone 1	Stage 1	VAR 1	Two 20-inch, variable-speed fans
Zone 1	Stage 2	VAR 2	Three 25-inch, variable-speed fans
Zone 1	Stage 3	RLY 1	Two 36-inch, single-speed fans
Zone 1	Stage 4	RLY 2	One 48-inch, single-speed fan
Zone 1	Stage 5	RLY 3	Two 48-inch, single-speed fans
Zone 1	—	RLY 4	Gas-fired furnace
Zone 1	—	RLY 5	Inlet actuator OPEN
Zone 1	—	RLY 6	Inlet actuator CLOSE
Zone 2	Stage 1	VAR 3	Two 20-inch, variable-speed fans
Zone 2	Stage 2	VAR 4	Three 25-inch, variable-speed fans
Zone 2	Stage 3	RLY 7	Two 36-inch, single-speed fans
Zone 2	Stage 4	RLY 8	One 48-inch, single-speed fan
Zone 2	Stage 5	RLY 9	Two 48-inch, single-speed fans
Zone 2	—	RLY 10	Gas-fired furnace
Zone 2	—	RLY 11	Inlet actuator OPEN
Zone 2	—	RLY 12	Inlet actuator CLOSE

Configuration checklist

Because some items need to be configured before others, we recommend configuring your Supra in the following order. If you do not have elements of a particular type, skip that step. For example, if you do not have actuators, skip to the next step.

Your **Supra user manual** has a similar configuration checklist. Any items listed on the Supra configuration checklist, but not on the SupraWare configuration checklist, cannot be done from SupraWare and must be done at the Supra. For more information, see your **Supra user manual**.

Configuring your site

- ☐ Configuring your farm information (SupraWare only)
- ☐ Adding and removing buildings (SupraWare only)

Configuring Supras

- ☐ Adding and removing Supras (SupraWare only)
- ☐ Adding and removing zones (SupraWare only)

Configuring variable and relay stages

- ☐ Configuring variable stages
- ☐ Configuring relays for actuators
- ☐ Calibrating actuators (Supra only)
- ☐ Configuring relays for single-stage heating and cooling or temperature-based duty cycles
- ☐ Configuring relays for curtains
- ☐ Configuring relays for time-based duty cycles
- ☐ Configuring relays for timed events

System configuration

- ☐ Selecting motor curves (Supra only)
- ☐ Configuring temperature averaging (Supra only)
- ☐ Selecting a humidity zone
- ☐ Configuring hysteresis (Supra only)
- ☐ Configuring warnings (Supra only)
- ☐ Testing the configuration

We recommend configuring all your control elements before programming the settings (temperature set points, idle speeds, and so on). Use the Installation worksheets in the back of your **Supra user manual** to help you keep track of which equipment is connected to which relays and variable stages.

If you receive a warning during configuration, look it up in the Troubleshooting section of your **Supra user manual** and then follow the instructions for correcting the problem.

Your Supra's built-in diagnostic tests are useful for testing your equipment after installing and configuring it. For more information, see your **Supra user manual**.

Configuring your site

Configuring your site means naming the site, configuring a few of the site-wide options, adding buildings, and adding Supras. You need to configure your site before you can configure Supras.

Configuring your farm information

Configuring your farm means naming the site and configuring site-wide options, including how you will display information, the data recording interval, and more.

Farm name and location

The name you enter for your farm is displayed in the software and on all charts and reports.

Temperature and water units

The units of measure you select for temperature and water determine how you display information in the software and the charts and reports.

To display water usage information, you must have a water meter connected to the Supra. For more information, see the installation section of your **Supra user manual**.

Data recording interval

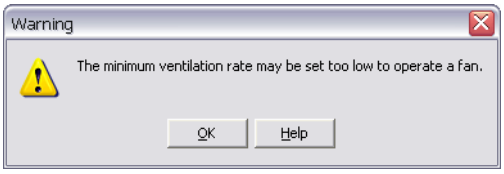
SupraWare reads information (temperature, water, humidity) from the Supras each minute. The data recording interval determines how often SupraWare stores the information. The default is every ten minutes. This means that every ten minutes, there will be an entry in the SupraWare data file for each Supra.

This is not the same as the *logging* interval for the Supra. For more information about the logging interval, see your **Supra user manual**.

Warnings

Warnings are one of SupraWare's built-in diagnostic tools. They warn you about conflicts or out-of-range conditions as you are programming the control.

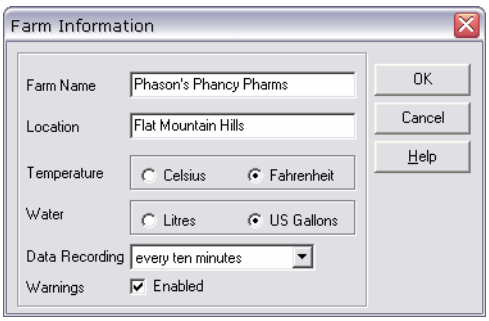
When you enable warnings in SupraWare, if you enter settings that could cause a problem, SupraWare displays a dialog box similar to the one below.



For more information about the types of warnings, see Appendix E in your **Supra user manual**. When you enable warnings in SupraWare, you enable *all* warnings for *all* Supras.

To configure your farm information

1. Open the Configuration Manager.
2. Double-click the farm icon (the tractor -).
   The Farm Information window appears.



3. Beside Farm Name and Location, type a name and a location for your site.
4. Beside Temperature and Water, select the units of measure you want to use to display information.
5. Beside Data Recording, select how often you want to store information in the Supra data files.
6. Beside Warnings, select whether or not you want to enable the warnings.
7. Click **OK** to save the configuration and return to the Communication Center.

Adding and removing buildings

After configuring your site, you need to add buildings to it. A building represents a barn at your site.

To add buildings

1. Open the Configuration Manager.
2. Under Buildings and Controls, left click and drag the building icon over to the farm icon and then drop it. You must drop the icon *on* the farm icon.
3. To name the building, right-click on the name to the right of the icon.
   The Building Properties window appears.
4. Type a name for the building and then click **OK**.
5. Repeat steps 2 to 4 for each building you want to add.

To rename buildings

To rename a building, right-click on the name to the right of the icon, type a new name, and then click **OK**.

To remove buildings

Before removing a building, you must remove all the Supras, zones, and control elements belonging to that building.

1. Open the Configuration Manager.
2. Under System Configuration, select the icon of the building you want to remove and then press DELETE.
   A confirmation window appears.
3. To remove the building, click **Yes**. To cancel, click **No**.

Configuring your Supras

Configuring your Supras means telling them what equipment they will be controlling, and to some extent, how they will be controlling that equipment. For example, each Supra has 12 relay stages. You need to tell the stages if they will be controlling curtains, heating or cooling elements, or timed events. In addition, you need to tell the stages in which zone (1, 2, 3, or 4) they will be controlling those elements.

Before you begin configuring your Supras, make sure:

- They have power
- All equipment has been properly connected to the correct terminals
- You know which equipment is connected to which relays and variable stages

If you installed SupraWare at a site that was previously using the Supras, or if you configured your Supras before installing SupraWare, you will not need to reconfigure them. All your configuration and settings will automatically transfer into SupraWare.

This chapter does not explain set points, idle speeds, or other settings. For information about those settings, See **Chapter 4: Programming your site** on page 41.

Each **Supra user manual** contains configuration worksheets to help you determine what the configuration should be and what values need to be set up for each element. Use these worksheets when configuring and programming Supras using SupraWare.

Adding and removing Supras

After adding buildings to your site, you can add Supras to your building.

When your Supras were installed, the installer should have written down the address on the installation sheets found in the Supra user manual. If you do not have the addresses written down you will have to go to each Supra and open the cover to find out the addresses. For more information, see the installation section of your **Supra user manual**.

An easier way to identify a particular Supra is to give it a meaningful name, such as "West Barn" or "Finishing Room." If you have previously configured your Supras, they will be sorted by name.

To add Supras

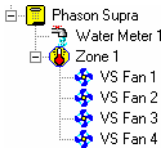
1. Open the Configuration Manager.
2. Under Buildings and Controls, left click and drag a Supra icon over to the building icon (the one in which the Supra is located) and then drop it. You must drop the icon *on* the building icon. The Add A New Control window appears.
3. Type the address of the control and then click **OK**.
   SupraWare adds the control to the building.
4. To name the Supra, right-click on the name to the right of the icon.
   The Control Information window appears.
5. Beside Name, type a name for the control and then click **OK**.
6. Repeat steps 2 to 5 for each Supra you want to add.

NOTE

If you installed SupraWare at a site that was previously using the Supras, or if you configured your Supras before installing SupraWare, you will not need to reconfigure them. All your configuration and settings will automatically transfer into SupraWare.

NOTE

When a Supra comes from the factory, it has a water meter assigned to it, one default zone (Zone 1), and the four variable stages assigned as cooling stages to Zone 1. If you expand the items, it looks similar to below.



To rename Supras

To rename a Supra, expand the building containing the Supra, right-click on the name to the right of the icon, type a new name, and then click **OK**.

To remove Supras

Before removing a Supra, you must remove all the zones and control elements belonging to that Supra.

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the Supra you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the Supra, click **Yes**. To cancel, click **No**.

Adding and removing zones

Zones are sections of buildings or rooms. Each zone has a target temperature, called the zone set point. Zones can be physically separated, such as rooms, or they can be areas of one large room. For example, a large room could be divided into two zones to provide better control response.

Each Supra can have up to four zones, which belong to that specific Supra. All temperature-based elements, such as variable stages, heat-cool stages, actuator stages, and so on, must be assigned to a zone. By default each Supra has a Zone 1.

For more information about zones, see **Understanding the structure and configuration of your site** on page 22.

To add zones

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra to which you want to add a zone.
3. Under Zones and Stages, left click and drag a zone icon over to the Supra icon (the one you are configuring) and then drop it. You must drop the icon *on* the Supra icon or name.
4. Repeat steps 2 and 3 for each zone you want to add.

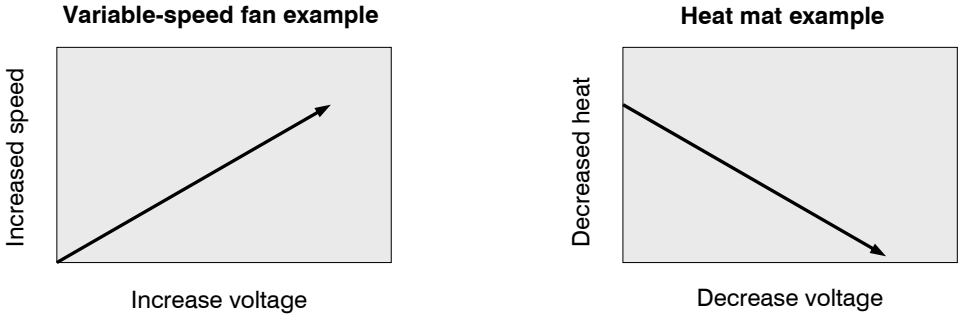
To remove zones

> Before removing a zone, you must remove all the control elements belonging to that zone.

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the zone you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the zone, click **Yes**. To cancel, click **No**.

Configuring variable stages

Each Supra's four variable stages (**VAR1** to **VAR4**) control elements that operate with gradually increasing voltage, such as variable speed fans, or gradually decreasing voltage, such as heat mats.

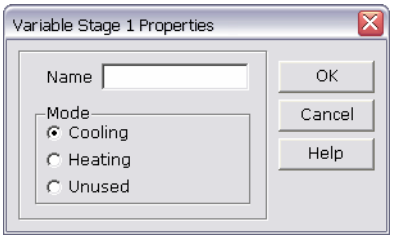


Configuring the variable stages means assigning them to a zone, selecting whether they are heating elements (for example, a heat mat) or cooling elements (for example, a fan), and assigning names to the stage. For more information about how variable stages work, see **Programming variable stages** on page 51.

> When a Supra comes from the factory, the four variable stages are assigned as cooling stages to Zone 1. If the stages are assigned to the correct zone, skip step 3.
>
> If you want to move a stage to a different zone, left click and drag the stage icon over to the zone and then drop it.

To configure variable stages

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra and zone to which you want to add a variable stage.
3. Under Zones and Stages, left click and drag a variable stage icon over to the zone icon (the one you are configuring) and then drop it. You must drop the icon *on* the zone icon or name.
4. Right-click the icon for the variable stage.
   The Variable Stage Properties window appears.



5. Beside Name, type a name for the variable stage.
6. Under Mode, select a mode for the variable stage.
7. Click **OK** to save the configuration and return to the Configuration Manager.
8. Repeat steps 2 to 7 for each variable stage you want to add.

To remove variable stages

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the variable stage you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the stage, click **Yes**. To cancel, click **No**.

You cannot actually remove variable stages. When you 'remove' them in SupraWare, the software simply marks them as being 'unused', but they are still there and appear as greyed-out fans.

Configuring relays for actuators

You can connect up to two actuators to a Supra. Each actuator you connect requires two relays: one for extending the actuator arm (opening the inlet), and one for retracting the arm (closing the inlet). You can connect actuators to any of the available relays, but side-by-side relays are recommended.

Before configuring the actuator relays, for each actuator, you need to know the following:

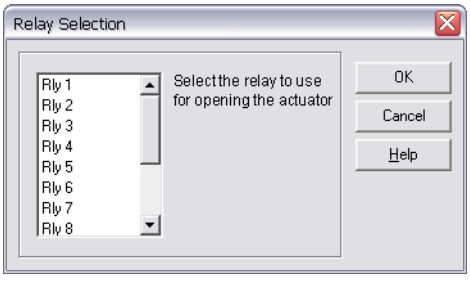
- The open relay number
- The close relay number
- The feedback terminal to which the actuator is connected (FB1 for Actuator 1 and FB2 for Actuator 2)

DO NOT switch on power to an actuator until you have calibrated the actuator and set the limit switches. Switching on the power to the actuator before completing these steps can damage the actuator or the actuator power supply.

For more information, see the configuring actuators section of the **Supra user manual**.

To configure relays for actuators

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra and zone to which you want to add an actuator stage.
3. Under Zones and Stages, left click and drag an actuator icon over to the zone icon (the one you are configuring) and then drop it. You must drop the icon *on* the zone icon or name.
   The Relay Selection window appears.



4. Select the relay you are using to open the actuator and then click **OK**.
5. Select the relay you are using to close the actuator and then click **OK**.
6. Right-click the actuator icon.
   The Actuator Properties window appears.
7. Beside Name, type a name for the actuator and then click **OK**.
8. Repeat steps 2 to 7 for each actuator you want to add.

To remove actuators

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the actuator you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the stage, click **Yes**. To cancel, click **No**.

Configuring relays for single-stage heating and cooling or temperature-based duty cycles

Relays configured for heating can control equipment as electric or gas heaters that can be either on or off. The relays switch on when the temperature drops below the set point and off when it rises above.

Relays configured for cooling can control single-speed fans, misters, or other cooling equipment that can be either on or off. The relays switch on when the temperature rises above the set point and off when it drops below.

This section is for ON/OFF relays. For information about variable-powered heating and cooling elements, see **Configuring variable stages** on page 32.

If you need to connect more cooling elements than you have relays, and you are not using all the variable stages, you can use any available variable stages as ON/OFF stages. For more information, see **Programming variable stages** on page 51.

To configure single-stage heating and cooling relays

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra and zone to which you want to add a relay.
3. Under Zones and Stages, left click and drag a relay icon over to the zone icon (the one you are configuring) and then drop it. You must drop the icon *on* the zone icon or name.
4. Right-click the icon for the relay.
   The Relay Properties window appears.

5. Beside Name, type a name for the relay.
6. Under Mode, select a mode for the relay.
7. Click **OK** to save the configuration and return to the Configuration Manager.
8. Repeat steps 2 to 7 for each single-stage heating or cooling relay you want to add.

To remove single-stage heating and cooling relays

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the relay you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the relay, click **Yes**. To cancel, click **No**.

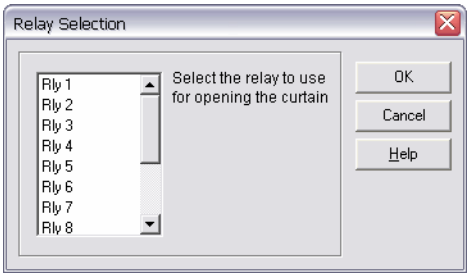
Configuring relays for curtains

Curtains are usually controlled by equipment called curtain machines (sometimes referred to as winches). Curtains are opened and closed to let in more air or less air, the idea being more air cools the building.

You can connect up to six curtain machines to your Supra. Each curtain machine you connect requires two relays: one for opening the curtain, and one for closing the curtain. You can connect curtain machines to any of the available relays, but side-by-side relays are recommended.

To configure relays for curtains

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra and zone to which you want to add a curtain stage.
3. Under Zones and Stages, left click and drag a curtain icon over to the zone icon (the one you are configuring) and then drop it. You must drop the icon *on* the zone icon or name.
   The Relay Selection window appears.



4. Select the relay you are using to open the curtain and then click **OK**.
5. Select the relay you are using to close the curtain and then click **OK**.
6. Right-click the curtain icon.
   The Curtain Properties window appears.
7. Beside Name, type a name for the curtain and then click **OK**.
8. Repeat steps 2 to 7 for each curtain you want to add.

To remove curtains

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the curtain you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the curtain, click **Yes**. To cancel, click **No**.

Configuring relays for time-based duty cycles

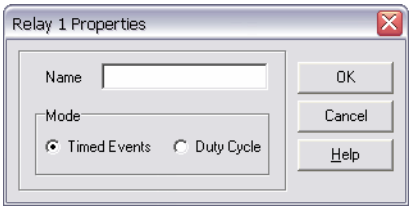
Time-based duty cycles allow you to have equipment operate for specific durations (ON duration and OFF duration) during certain hours of the day. For example, you can have a feed auger run for 15 minutes and then stop for 45 minutes between 6:00 AM and 8:00 PM. In other words, "Between 6:00 AM and 8:00 PM, I want the feed auger ON for 15 minutes, OFF for 45 minutes, ON for 15 minutes…" and so on.

This section explains how to configure time-based duty cycles. If you want to configure temperature-based duty cycles (duty cycles that operate for specific durations while the temperature is above or below a certain value), see **Configuring relays for single-stage heating and cooling or temperature-based duty cycles** on page 35.

If you want to configure elements that turn on and off at specific times, see **Configuring relays for timed events** on page 39.

To configure relays for time-based duty cycles

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra to which you want to add a time-based duty cycle relay.
3. Under Zones and Stages, left click and drag a relay icon over to the Supra icon (the one you are configuring) and then drop it. You must drop the icon *on* the Supra icon or name, *not a zone icon.*
4. Right-click the icon for the relay.
   The Relay Properties window appears.



5. Beside Name, type a name for the relay.
6. Under Mode, select Duty Cycle.
7. Click **OK** to save the configuration and return to the Configuration Manager.
8. Repeat steps 2 to 7 for each time-based duty cycle relay you want to add.

To remove time-based duty cycle relays

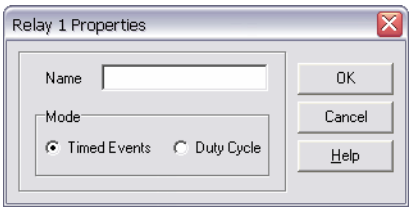
1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the relay you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the relay, click **Yes**. To cancel, click **No**.

Configuring relays for timed events

Relays configured for timed events can be used to control feed augers, turn lights on and off, or control equipment that must operate at specific times each day, regardless of temperature. An example of a timed event would be would be switching the yard lights on at 8:00 PM and off at 7:00 AM.

To configure relays for timed events

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra to which you want to add a timed event relay.
3. Under Zones and Stages, left click and drag a relay icon over to the Supra icon (the one you are configuring) and then drop it. You must drop the icon *on* the Supra icon or name, *not a zone icon.*
4. Right-click the icon for the relay.
   The Relay Properties window appears.



5. Beside Name, type a name for the relay.
6. Under Mode, select Timed Event.
7. Click **OK** to save the configuration and return to the Configuration Manager.
8. Repeat steps 2 to 7 for each timed event relay you want to add.

To remove timed-event relays

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the relay you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the relay, click **Yes**. To cancel, click **No**.

Testing the configuration

After configuring all the control elements (variable stages, relays, and so on), test your Supra to make sure the configuration is correct. In other words, make sure what you think is connected to a particular relay or stage *is* actually connected to that relay or stage.

You can test the configuration by using the diagnostic feature of your Supra. The diagnostic feature allows you to operate the equipment, regardless of temperature or time. As you operate each piece of equipment, visually check to see if that equipment is doing what you tell it.

For example, when you switch on VAR 1 (variable stage 1) at the Supra, does the fan or heater you think is connected to that stage switch on? When switch VAR 1 off, does the fan or heater switch off?

For more information about the diagnostic test, see Servicing and maintaining your Supra in the **Supra user manual**.

Selecting a humidity zone

If you installed a Relative Humidity Sensor, you need to select which zone the sensor will be monitoring, in other words, you need to add the sensor to a zone. A humidity sensor can monitor only one zone.

To add a humidity sensor to a zone

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree and select the Supra and zone to which you want to add a humidity sensor.
3. Under Zones and Stages, left click and drag the humidity sensor icon over to the zone icon (the one you are configuring) and then drop it. You must drop the icon *on* the zone icon or name.

To remove humidity sensor from a zone

1. Open the Configuration Manager.
2. Under System Configuration, expand the site tree, select the humidity sensor you want to remove, and then press DELETE.
   A confirmation window appears.
3. To remove the humidity sensor, click **Yes**. To cancel, click **No**.

Chapter 4: Programming your site

This chapter explains how to program Supras using SupraWare. Programming Supras includes telling them which settings to use when controlling your equipment.

- Programming Supras
- Programming the zones
- Programming variable and relay stages
- Programming alarms

Programming Supras

Programming your Supra basically means telling the equipment what you want it to do and when you want it done. For example, for a single-speed fan set for cooling, you might say: "Switch on when the temperature rises above 80°F."

Programming checklist

Because some settings must be programmed before others, we recommend programming your Supra in the following order. If you do not have elements of a particular type, skip that step. For example, if you do not have curtains, go to the next step.

Programming the zones

- ☐ Setting the zone set point
- ☐ Programming growth curves
- ☐ Programming the humidity compensation

Programming variable and relay stages

- ☐ Programming variable stages
- ☐ Programming actuators
- ☐ Programming curtains
- ☐ Programming heating and cooling elements and temperature-based duty cycles
- ☐ Programming timed events
- ☐ Programming time-based duty cycles

Programming the alarm and display settings

- ☐ Programming alarms (additional alarms at Supra)
- ☐ Setting up the status display (Supra only)
- ☐ Setting up the logging interval (Supra only)

Setting up security and users

For more information, see **About SupraWare and security** on page 19.

Each **Supra user manual** contains programming worksheets to help you determine what the programming should be and what values need to be set up for each element. Use these worksheets when programming Supras using SupraWare.

Before you begin programming your Supra, make sure:

- It has power
- All equipment has been properly connected to the correct terminals.
- You know which equipment is connected to which relays and variable stages
- All variable and relay stages have been properly configured and tested. For more information, see **Chapter 3: Configuring Supras** on page 21.

If you have a network of Supras and are monitoring and controlling them using SupraWare, DO NOT program your Supras with the keypad and SupraWare at the same time. Choose one method or the other.

If you receive a warning during programming, look it up in the Troubleshooting section of your **Supra user manual** and then follow the instructions for resolving the condition.

Programming the zones

Programming the zones means entering the 'target temperatures' for each zone. If you are monitoring humidity, you need to program the humidity limits.

There are two options for the zone temperatures:

- Zone set points
- Growth curves

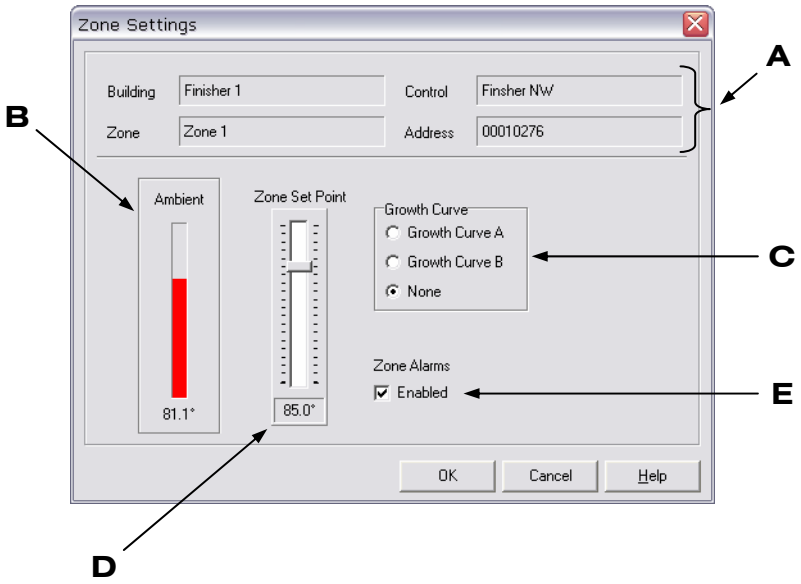
You can set up both zone set points and growth curves, but your Supra will use only one or the other. If a growth curve is enabled for a zone, the control uses the growth curve settings. If there is no growth curve for a zone, the control uses the zone set points.

Setting the zone set point

A zone set point is the desired or target temperature for a zone. The individual set points for each variable and relay stage will be adjusted relative to the zone set point for that zone. Make sure you set the zone set point *before* setting the individual set points.

For example, let's say the zone set point for zone 1 is 80°F, a variable-stage fan set point is 5 degrees higher (85°F), and a single-stage heater set point is 7 degrees lower (73°F). If you lower the zone set point to by 5 degrees to 75°F, the set points for the fan and heater will also be lowered by 5 degrees to 80°F and 68°F respectively.

Once a zone set point is set, it remains at that temperature until you change it, or until an enabled growth curve makes an adjustment to it.



A This is information about the zone and its control.

B This is the current temperature in the zone.

C This is the growth curve selection. If you are using a growth curve, select the curve you are using. If you are using a zone set point and not a growth curve, select None.

D This is the zone set point. You can adjust the set point by clicking and dragging the slider up or down.

E This is where you enable or disable the temperature alarms for the zone.

To set a zone set point

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and zone for which you want to set the zone set point and then click **Adjust**.
   The Zone Settings window appears.
3. Select the type of zone control you will be using:
   - If you are using a zone set point (not a growth curve), under Growth Curve, select None.
   - If you are using a growth curve, under growth curve select curve A or curve B.
4. Under Zone Set Point, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the set point.
5. Click **OK** to return to the Settings Manager.
6. Repeat steps 2 to 5 for each zone you want to set up.

Programming growth curves

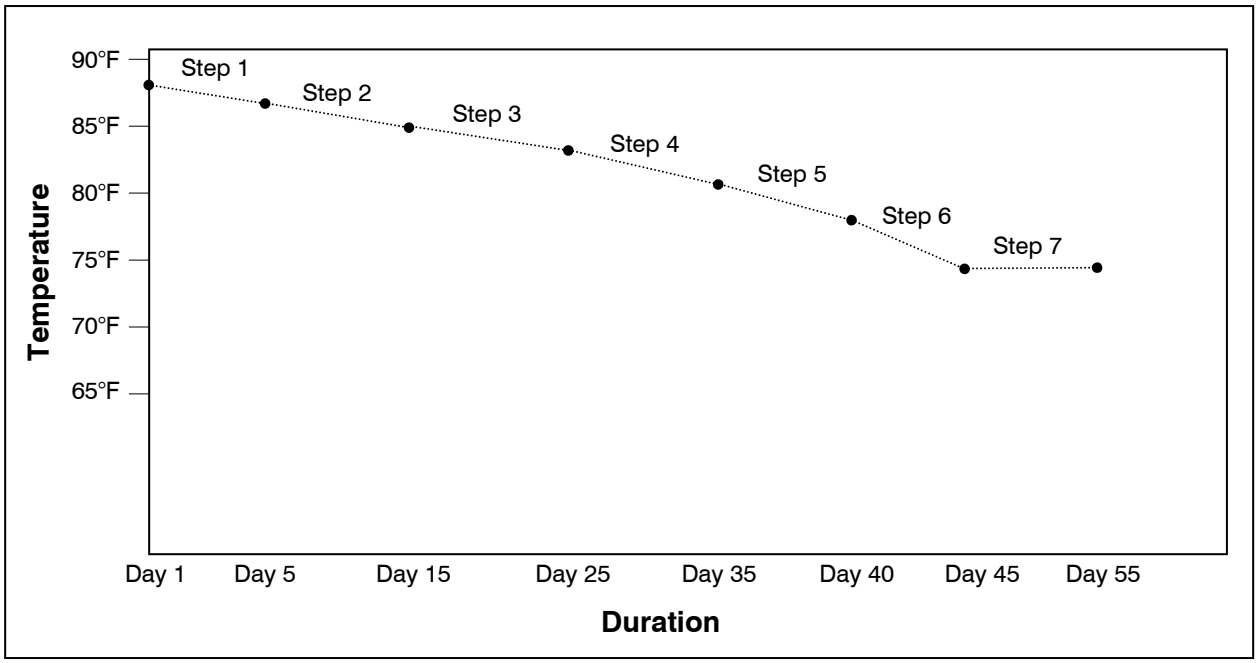
A growth curve is an extension of the zone set point concept. The growth curve automatically adjusts the temperature set points over time to control the temperature in a room or zone. It is called a 'growth' curve because it adjusts the set-points as the animals 'grow'.

For example, in hog production, newborn piglets require a high temperature for comfort and health. As they grow older, they need a steadily lower temperature. Using the growth curve, you can have your Supra automatically adjust the temperatures. For example, start at 76°F for 1 day, drop to 74°F for 1 day, then to 71°F for 21 days, 68°F for 14 days, and so on.

You can have up to seven steps in a growth curve. Each step has a starting temperature set point and duration (in days). Your Supra automatically calculates the set points for the days between the steps and adjusts the set points at midnight each day. Individual set points for the variable and fixed stages are adjusted relative to the growth curve temperature for that particular day. This is an extremely powerful feature because it lets you put fan and heating strategies in place once, and then adjust them automatically over time.

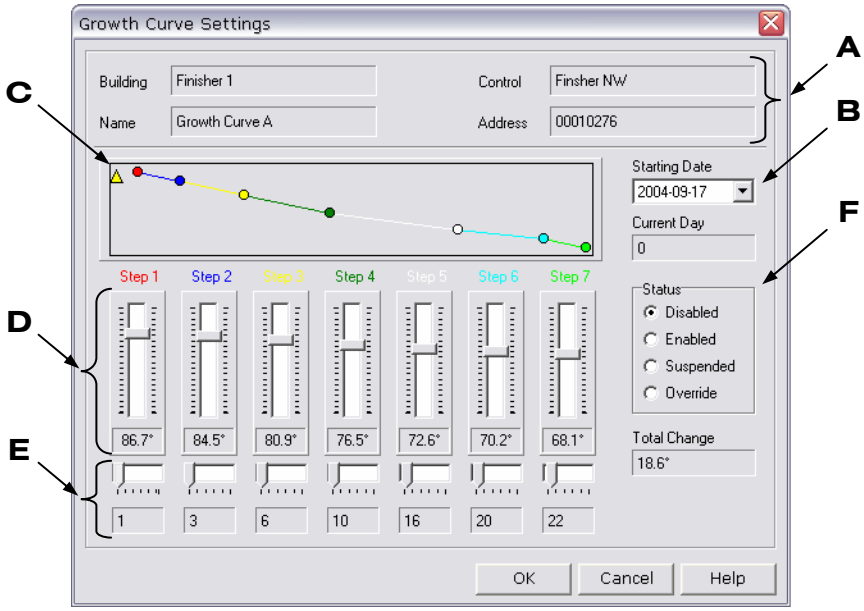
For example, in the table on the next page, step 2 has a duration of 10 days. The difference between the starting set point (86.5°F) and the starting set point for the next step (85°F) is 1.5°F. The Supra divides the temperature difference by the duration 1.5 ÷ 10=0.15 and then automatically adjusts the set point by 0.15°F each day for 10 days.

Set point	Temperature (°F)	Duration (days)
1	88.0	5
2	86.5	10
3	85.0	10
4	83.5	10
5	81.0	5
6	78.0	5
7	74.0	10



Your can program two growth curves: Growth Curve A and Growth Curve B. This lets you control two different areas of your facility with each Supra, with each area having independent set points.

You cannot define two growth curves for the same zone. If all zones are controlled by a single growth curve, use Growth Curve A.



A This is information about the control.

B This is the start date and current day for the growth curve.

C This is a graphical representation of the growth curve. As you adjust the settings, the graph changes.

D These are the sliders for adjusting the set points for the seven steps of the growth curve.

E These are the sliders for adjusting the duration of the steps.

F This is the status of the growth curve.

Before defining growth curves, assign the zones that will be controlled according to the curves. For more information, see **Setting the zone set point** on page 44.

To define growth curves

1. Open the Settings Manager.
2. Expand the site tree and select the Supra for which you want to define a growth curve.
3. Beside the growth curve you want to define (A or B), click **Adjust**.
   The Growth Curve Settings window appears.
4. Under Starting Date, select a date. For more information about selecting dates, see **Selecting dates** on page 80.
5. Under Step 1, left click the vertical slider and then use the up or down arrows on your keyboard to adjust the temperature set point.
6. Under Step 1, left click the horizontal slider and then use the right or left arrows on your keyboard to adjust the duration.
7. Repeat steps 5 and 6 for steps 4 to 7 of the growth curve.
8. Under Status, select the current status of the growth curve. The table below describes each choice.

Setting	Description
Disabled	This growth curve is ignored. When enabled, the growth curve starts at day 1.
Enabled	This growth curve is active for the zones specified.
Suspended	All set points will stay at their current values, and the growth curve will remain on its current day, until it is enabled again. When enabled, it will pick up where it left off.
Override	This growth curve will still advance one day at a time, but all the set points will be determined by the user-entered zone set point. When enabled, the zone set point will jump to the growth curve set point for that day. This may result in a sudden change in temperature if the user's set point is very different from the growth curve set point.

If you are programming your growth curve a few days before you want it to start, set the status to disabled. On the day you want to start the growth curve, change the status to enabled.

9. Click **OK** to save the growth curve and return to the Settings Manager.

Programming the humidity compensation

If you have installed and configured a humidity sensor, you need to program the humidity compensation. Programming the humidity compensation means setting the humidity factor and the upper and lower humidity limits. Your Supra uses these settings to compensate for high humidity levels and it adjusts the ventilation accordingly.

The humidity band is the humidity range in which your Supra attempts to compensate for humidity. The band consists of a lower and upper limit.

The humidity factor is a number between 0 and 10 that determines the amount of humidity compensation. A lower value produces a slight ventilation adjustment, while a higher value produces a greater adjustment.

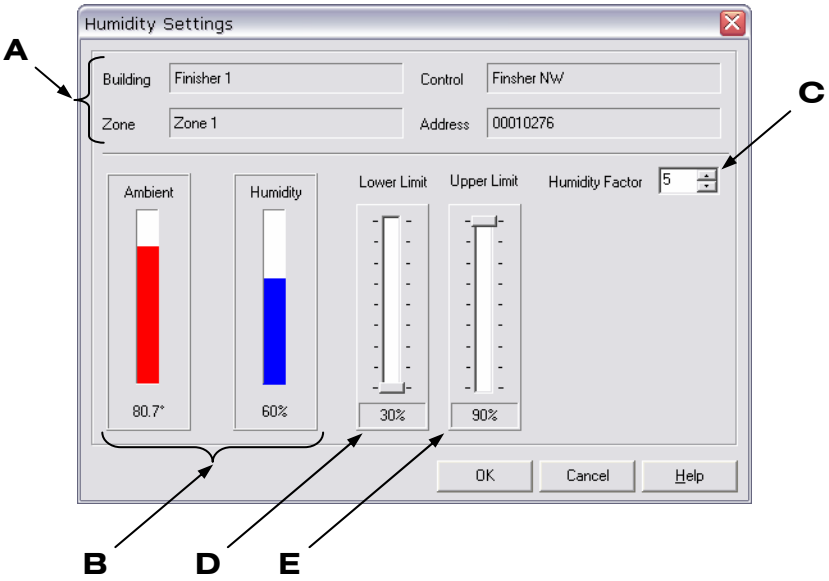
How it works

Your Supra uses the humidity band and humidity factor to adjust the ventilation for the zone. At the beginning of the band (the lower limit), very little adjustment is made. As the humidity rises, the adjustment increases. At or above the upper limit of the band, the maximum adjustment is applied.

For example, if the maximum acceptable humidity for your zone is 70%, you would set the lower limit to 70%. The upper limit could be set for 90% (90% is the maximum allowed and 20% is the minimum difference between the lower and upper limits).

When the humidity is below 70%, the ventilation rate is controlled by the zone's normal, programmed settings. As the humidity rises above 70%, humidity compensation starts to take effect and the ventilation rate increases. When the humidity reaches 90%, the humidity compensation reaches its maximum adjusted rate.

If the outside air is cooler than the zone temperature, the ambient temperature in the zone drops due to the increased ventilation. This causes the heaters to switch on, which help to dry the air. It is important to balance this effect with your heating system's ability to maintain the temperature while drying out the room. A lower humidity factor starting at a lower humidity level, and spread over a wider band, is better for lower-capacity heating systems.



A This is information about the zone and its control.

B This is the current temperature and humidity in the zone.

C This is the humidity factor (the amount of compensation).

D This is the lower limit (where the Supra starts to compensate for humidity). You can adjust the limit by clicking and dragging the slider up or down.

E This is the upper limit (where the Supra reaches the full amount of compensation for humidity). You can adjust the limit by clicking and dragging the slider up or down.

To program the humidity compensation

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and sensor for which you want to program the humidity compensation and then click **Adjust**.
   The Humidity Settings window appears.
3. Beside Humidity Factor, click the up or down arrows to adjust the amount of compensation.
4. Under Lower Limit, click and drag the slider to the desired humidity. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
5. Under Upper Limit, click and drag the slider to the desired humidity. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
6. Click **OK** to return to the Settings Manager.

Programming variable and relay stages

Programming the stages means entering the settings such as temperature set points, idle speeds, ON/OFF times and durations, and so on. Programming the stages involves programming the settings for:

- Variable stages
- Relay stages
  - Actuators
  - Curtains
  - Heating and cooling stages, including temperature-based duty cycles
  - Timed events
  - Time-based duty cycles

Programming variable stages

Before programming the variable stages, make sure you have properly configured them. For more information, see **Configuring variable stages** on page 32.

Programming the variable stages means setting the temperature set points and idle speeds. There are four settings for each variable stage.

For a cooling stage:

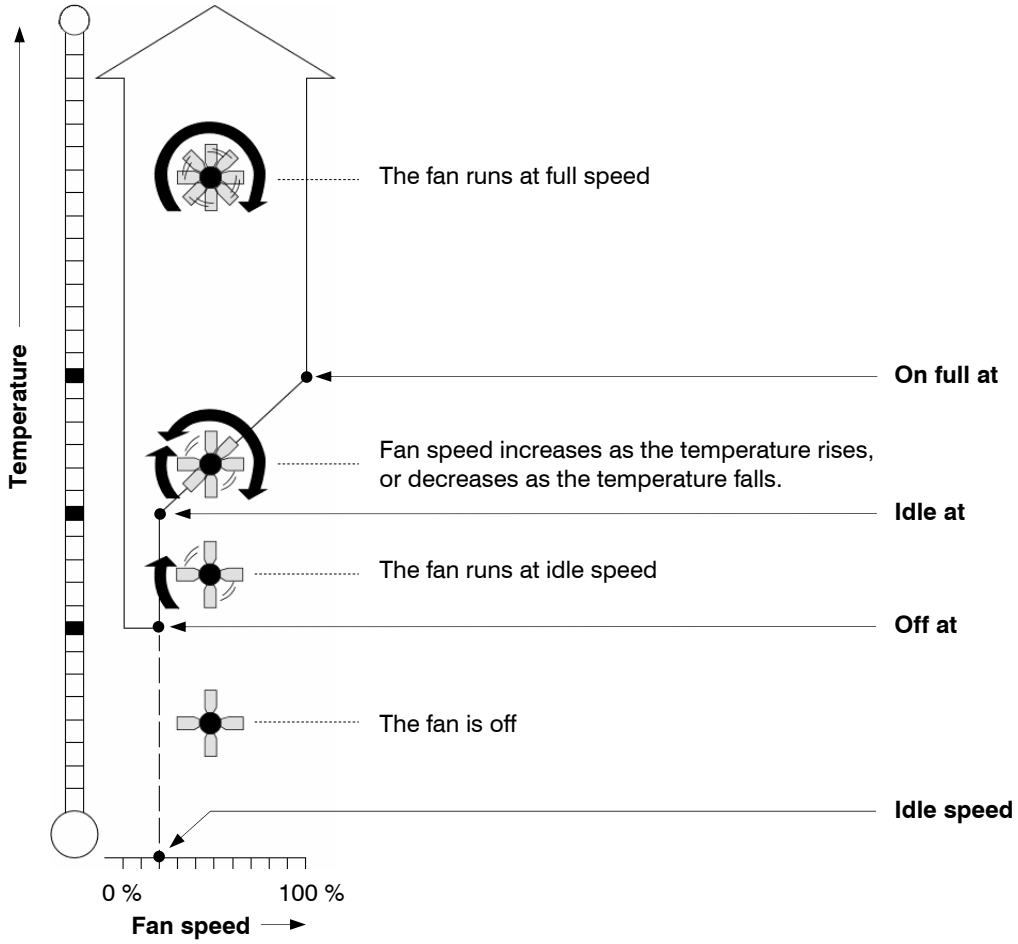
- On full at
- Idle at (sometimes called set point)
- Off at (sometimes called idle range)
- Idle speed

For a heating stage:

- Off at
- Set point
- On full at
- Min heat

Cool mode

When the temperature is below the "off at" temperature, the fan is off. When the temperature rises above the idle range, the fan runs at the idle speed. The fan continues to run at the idle speed until the temperature rises to the "idle at" temperature. When the temperature is between the set point and the "on full at" temperature, the fan increases or decreases proportionally with the temperature. When the temperature is above the differential, the fan runs at full speed.



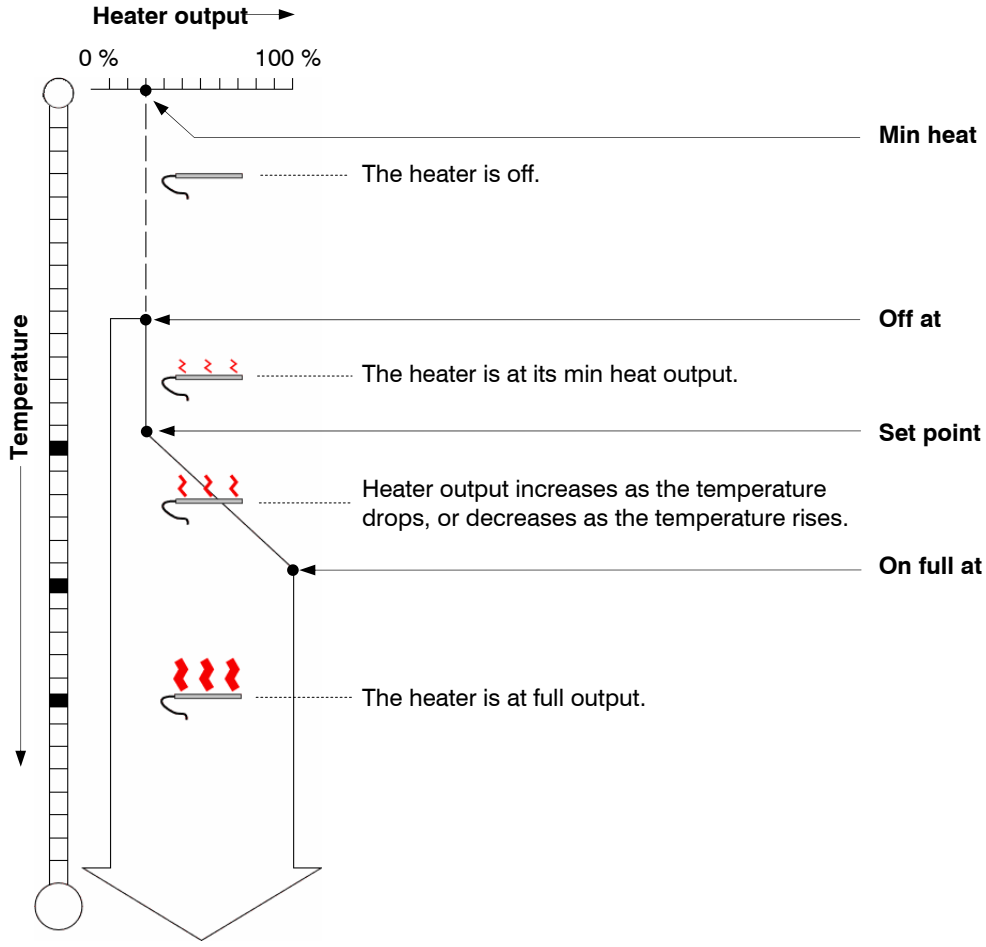
If you need to connect more cooling elements than you have relays, and you are not using all the variable stages, you can use any available variable stage as an ON/OFF stage.

Set the idle speed to 100% and 'off at' to the temperature at which you want the stage to switch on/off.

You no longer have "variable" speed or power; instead you have either full on or full off, the same as a regular cooling element. The 'idle at' and 'on full at' settings have no effect when you use a variable stage this way.

Heat mode

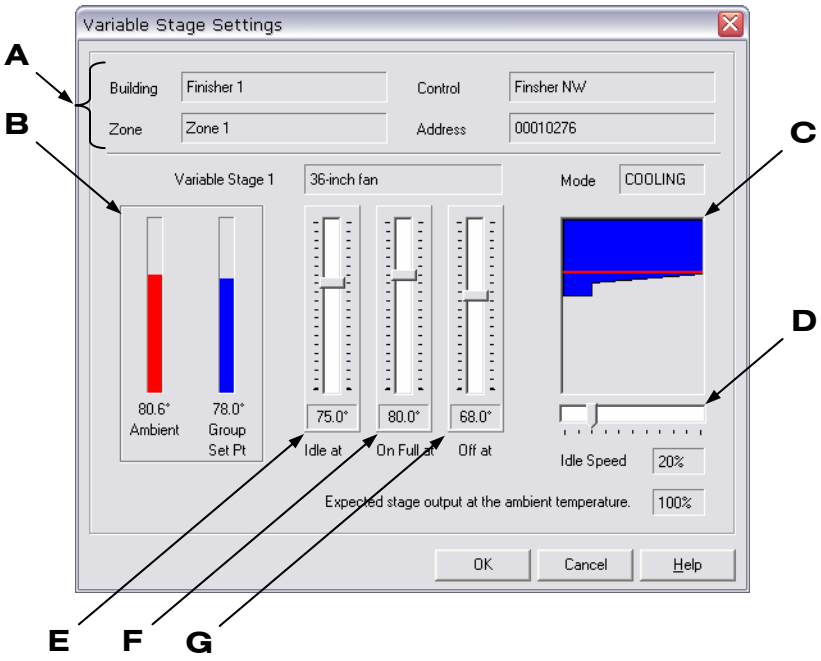
Heat mode works the same as cooling mode, except in reverse. When the temperature is above the "off at" temperature, the heater is off. When the temperature drops below the "off at" temperature, the heater is at the min output. The heater continues to operate at the min output until the temperature drops to the set point. When the temperature is between the set point and the differential ("on full at" temperature), the heater output increases or decreases proportionally with the temperature. When the temperature is below the differential, the heater is at full output.



If you need to connect more heating elements than you have relays, and you are not using all the variable stages, you can use any available variable stage as an ON/OFF stage.

Set 'min heat' to 100% and 'off at' to the temperature at which you want the stage to switch on/off.

You no longer have "variable" speed or power; instead you have either full on or full off, the same as a regular heating element. The 'setpoint' and 'on full at' settings have no effect when you use a variable stage this way.



A This is information about the zone and its control.

B This is zone set point and current temperature for the zone.

C This is a graphical representation of the variable stage settings. As you adjust the settings, the image changes.

D This is the idle speed setting. You can adjust the speed by clicking and dragging the slider left or right.

E This is the idle at setting. You can adjust the temperature by clicking and dragging the slider up or down.

F This is the on full at setting. You can adjust the temperature by clicking and dragging the slider up or down.

G This is the off at setting. You can adjust the temperature by clicking and dragging the slider up or down.

This example and the following steps use cooling stage terminology. A heating stage uses ‘off at’, ‘setpoint’, ‘on full at’, and ‘min heat’.

To program variable stages

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and variable stage you want to program and then click **Adjust**.
   The Variable Stage Settings window appears.
3. Above Idle Speed, click and drag the slider to the desired speed. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
4. Above Idle at, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
5. Repeat step 4 for the On Full at and Off at settings.
6. Click **OK** to return to the Settings Manager.

Programming actuators

Before programming the actuator relays, make sure you have properly configured the relays and calibrated the actuators. For more information, see **Configuring relays for actuators** on page 33 and **Calibrating actuators** in your **Supra user manual**.

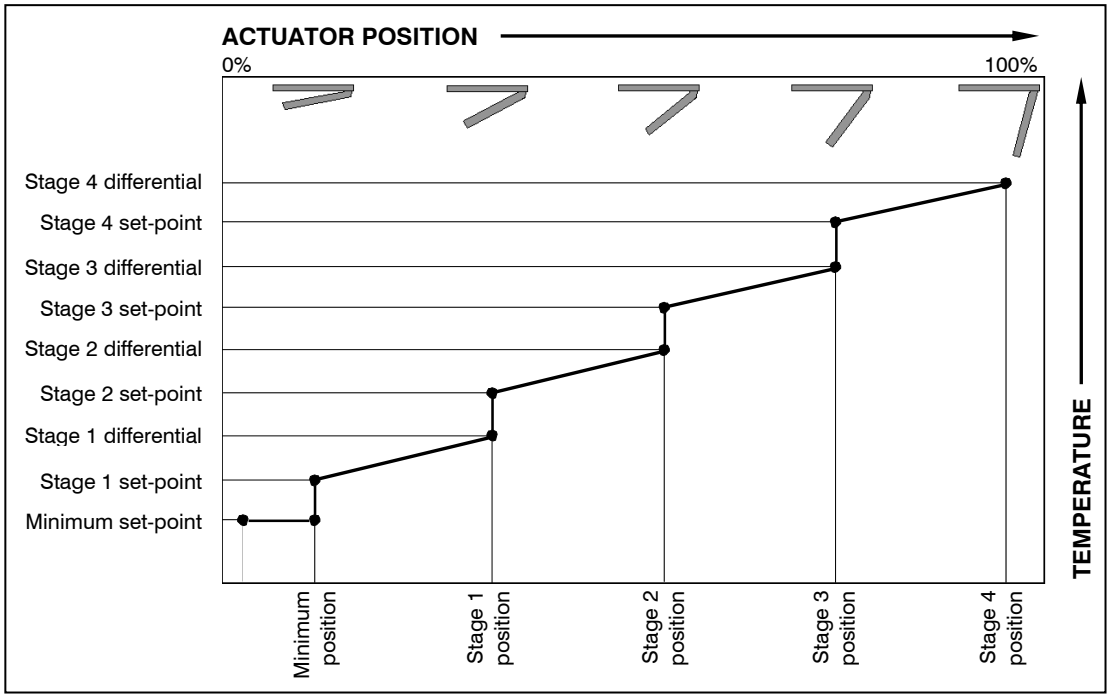
Do not use actuators to control curtains. This can burn out actuator motors. Set up curtains using relays and timers. For more information, see **Programming curtains** on page 58.

Setting up the actuators means setting the temperature set points, differential, and position for each stage of the actuator. Each actuator has four stages. For each actuator you are setting up you need to program the:

- Minimum set point temperature
- Minimum position
- Set point temperature, differential temperature, and position for stages 1 to 4

How actuators work

Below is an explanation of the settings and how actuators function.

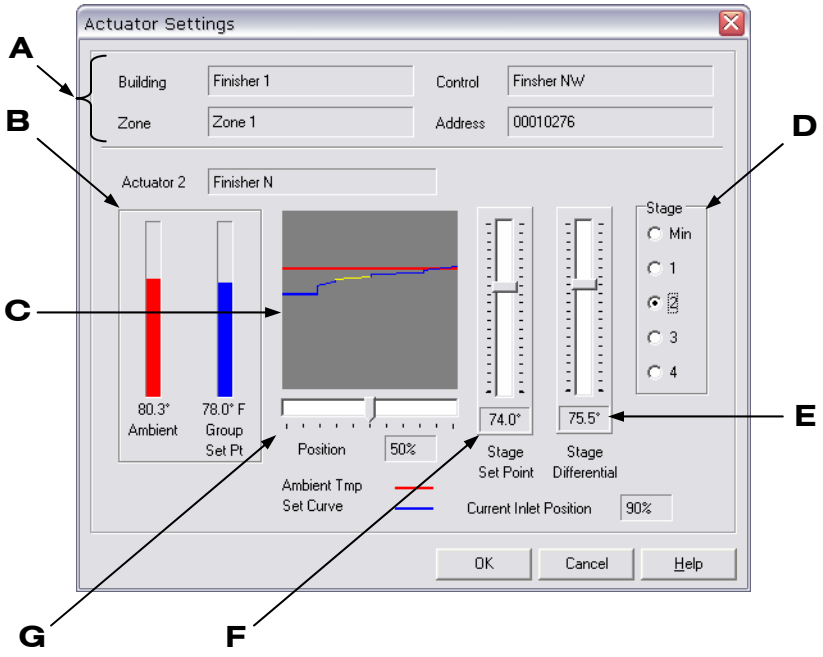


- While the temperature is below the minimum set point, the actuator is closed.
- When the temperature rises to the minimum set point, the actuator moves to the minimum position.
- As the temperature rises, the actuator has four stages it moves through until it reaches its maximum open position. This method lets you gradually open inlets instead of fully opening them when the temperature rises above a single set point.

For example, you might decide to have the actuator open to 40 percent at stage 1, 60 percent at stage 2, 80 percent at stage 3, and 100 percent at stage 4.

However, you don't want the actuator to open directly to 40 percent. That is why there are two temperature settings for each stage. The first setting is the stage set point. This is where the actuator starts opening. The second setting is the differential. This is where the actuator reaches the stage position.

In other words, "when the temperature is here (stage set point), I want the actuator to start opening. When the temperature reaches here (stage differential), I want the actuator to be at this position (stage position) percent."



A This is information about the zone and its control.

B This is zone set point and current temperature for the zone.

C This is a graphical representation of the actuator settings. As you adjust the settings, the image changes.

D This is the selected stage. The set point, differential, and position settings are for the selected stage.

E This is the selected stage's differential. You can adjust the settings by clicking and dragging the slider up or down. The Min stage has no differential.

F This is the selected stage's set point. You can adjust the settings by clicking and dragging the slider up or down.

G This is the selected stage's position. You can adjust the settings by clicking and dragging the slider left or right.

To program actuators

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and actuator you want to program and then click **Adjust**.
   The Actuator Settings window appears.
3. Below Stage, select Min.
4. Above Stage Set Point, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
5. Above Position, click and drag the slider to the desired position. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
6. Below Stage, select 1.
7. Above Stage Differential, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
8. Above Stage Set Point, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
9. Above Position, click and drag the slider to the desired position. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
10. Repeat steps 6 to 9 for stages 2, 3, and 4.
11. Click **OK** to return to the Settings Manager.

Programming curtains

Curtains control the temperature by adjusting the air flow into the facility. Before setting up the curtains, make sure you have properly configured the relays. For more information, see **Configuring relays for curtains** on page 36.

Setting up the curtains means setting the temperature set point, idle band, and idle and run times. Each curtain has six settings:

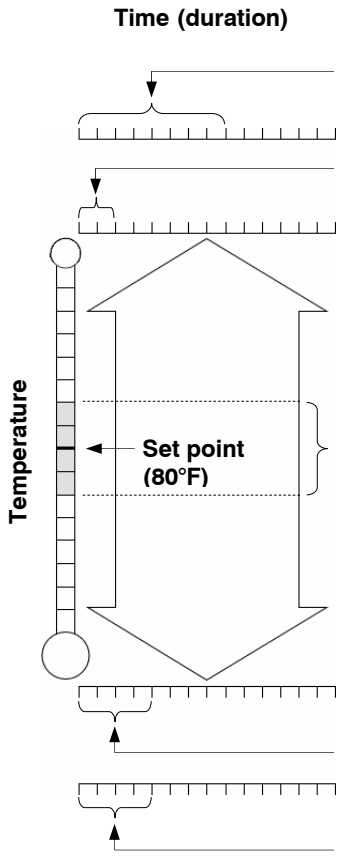
- Set point—the temperature at which the curtains hold their position.
- Idle band—the buffer around the set point within which the curtains hold their position.
- Open run time—the duration the curtains open during the OPEN cycle
- Open idle time—the duration the curtains hold their position during the OPEN cycle
- Close run time—the duration the curtains open during the CLOSE cycle
- Close idle time—the duration the curtains hold their position during the CLOSE cycle

How curtains work

Curtains hold their position while the temperature is within the idle band of the set point. For example, if the set point is 80°F and the idle band is 2°F, the curtain holds its position when the temperature is between 79°F and 81°F.

If the temperature rises above the idle band (above 81°F in our example), the curtain opens for the open run duration. After opening, it holds its position for the open idle duration. If the temperature is still above the idle band, the curtain again opens for the open run duration and the process repeats.

If the temperature drops below the idle band (below 79°F in our example), the curtain closes for the close run duration. After closing, it holds its position for the close idle time. If the temperature is still below the idle band, the curtain again closes for the close run duration and the process repeats.



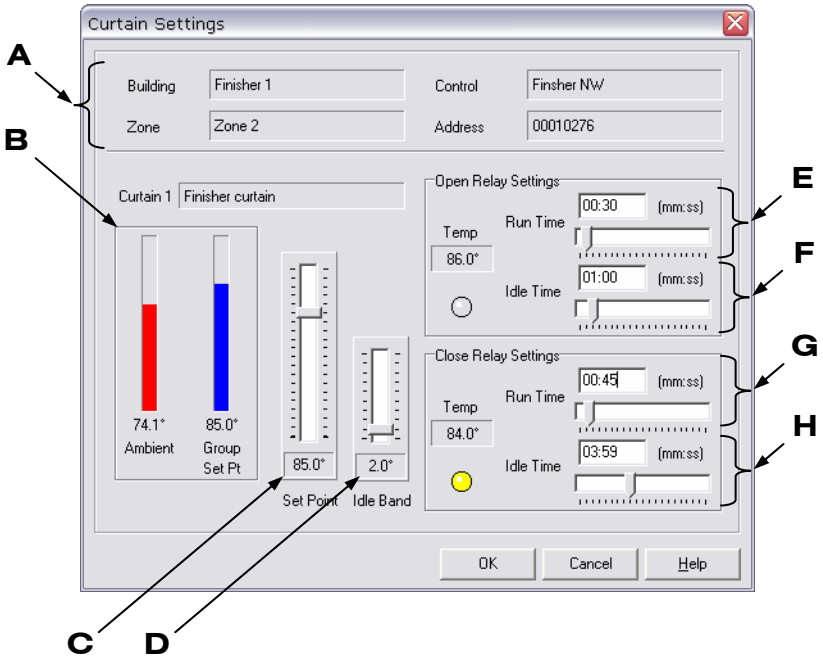
Open idle (02:00 mm:ss)
After the curtain opens for the 'open run' duration, it holds its position for the close idle time.

Open run (00:30 mm:ss)
If the temperature rises above the idle band, the curtain opens for this duration.

Idle band (2°F)
When the temperature is within the idle band, the curtain remains in its current position.

Close run (01:00 mm:ss)
If the temperature drops below the idle band, the curtain closes for this duration.

Close idle (01:00 mm:ss)
After the curtain closes for the 'close run' duration, it holds its position for the close idle time.



A This is information about the zone and its control.

B This is the zone set point and current temperature for the zone.

C This is the curtain's set point. You can adjust the set point by clicking and dragging the slider up or down.

D This is the idle band. You can adjust the idle band by clicking and dragging the slider up or down.

E This is the open relay run time. You can adjust the time by clicking and dragging the slider left or right.

F This is the open relay idle time. You can adjust the time by clicking and dragging the slider left or right.

G This is the close relay run time. You can adjust the time by clicking and dragging the slider left or right.

H This is the close relay idle time. You can adjust the time by clicking and dragging the slider left or right.

To program curtains

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and curtain you want to program and then click **Adjust**. The Curtain Settings window appears.
3. Above Set Point, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
4. Above Idle Band, click and drag the slider to the desired range. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
5. Under Open Relay Settings, beside Run Time, click and drag the slider to the desired duration. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
6. Under Open Relay Settings, beside Idle Time, click and drag the slider to the desired duration. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
7. Repeat steps 5 and 6 for the close relay settings.
8. Click **OK** to return to the Settings Manager.

Programming heating and cooling elements and temperature-based duty cycles

Heating and cooling elements control the temperature by switching single-stage heating equipment such as electric heaters, or cooling equipment such as misters ON or OFF. Before setting up the elements, make sure you have properly configured the relays. For more information, see **Programming heating and cooling elements and temperature-based duty cycles** on page 35.

There are two types of heating and cooling element setups: 'standard' and 'temperature-based duty cycle'. Programming a standard element means setting the temperature set point and selecting 'Off' for the duty cycle.

Programming a temperature-based duty cycles means setting the temperature set point, selecting 'On' for the duty cycle, and setting the ON and OFF durations.

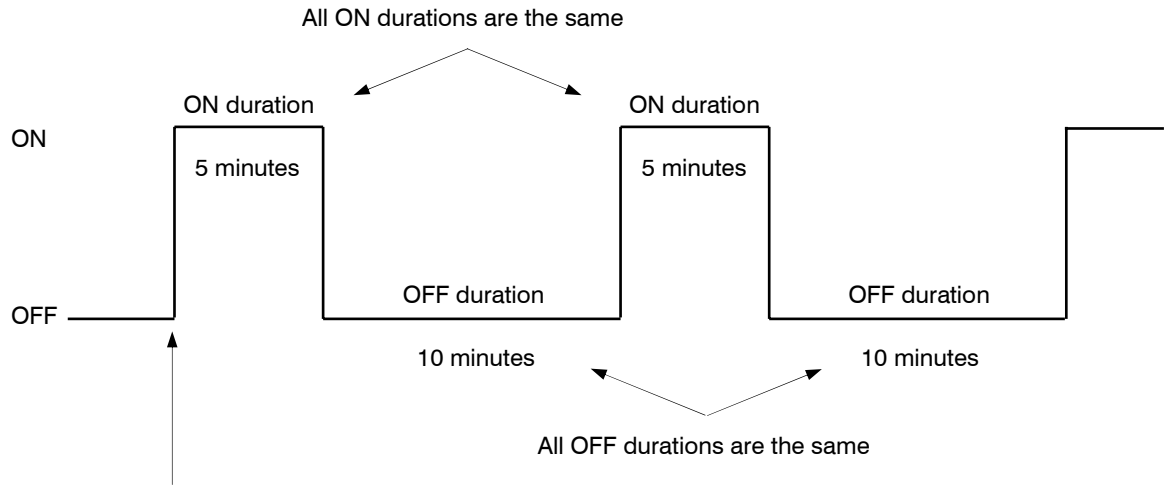
How temperature-based duty cycles work

For heating elements

When the temperature is above the set point, the heating element is off. When the temperature drops below the set point, the element switches on for the on duration and then off for the off duration. If at any time the temperature rises above the set point, the duty cycle switches off and will not switch on again until the temperature drops below the set point.

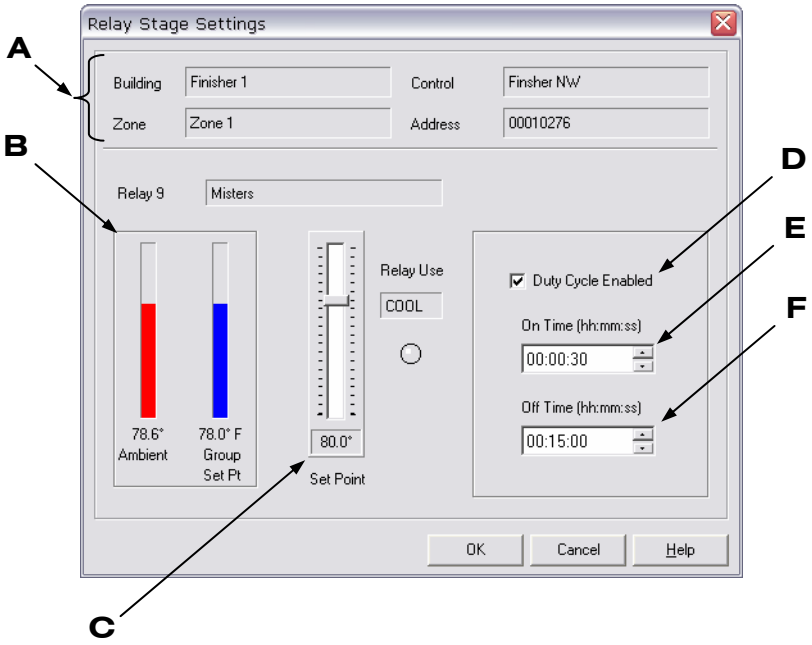
For cooling elements

When the temperature is below the set point, the cooling element is off. When the temperature rises above the set point, the element switches on for the on duration and then off for the off duration. If at any time the temperature drops below the set point, the duty cycle switches off and will not switch on again until the temperature rises above the set point.



The relay does not switch ON until a temperature condition has been met. For example, if the temperature rises above 85°F, switch on a mister for 5 minutes and then OFF for 10 minutes. Repeat this until the temperature is below 85°F.

If you need to connect more heating or cooling elements than you have relays, and you are not using all the variable stages, you can use any available variable stages as ON/OFF stages. For more information, see **Programming variable stages** on page 51.



A This is information about the zone and its control.

B This is the zone set point and current temperature for the zone.

C This is the stage's set point. You can adjust the set point by clicking and dragging the slider up or down.

D This check box allows you to enable or disable duty cycle for the stage.

E This is the on time for the duty cycle. You can adjust the duration by clicking the up or down arrows.

F This is the off time for the duty cycle. You can adjust the duration by clicking the up or down arrows.

To program heating or cooling elements (without a duty cycle)

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and stage you want to program and then click **Adjust**. The Relay Stage Settings window appears.
3. Above Set Point, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
4. Click **OK** to return to the Settings Manager.

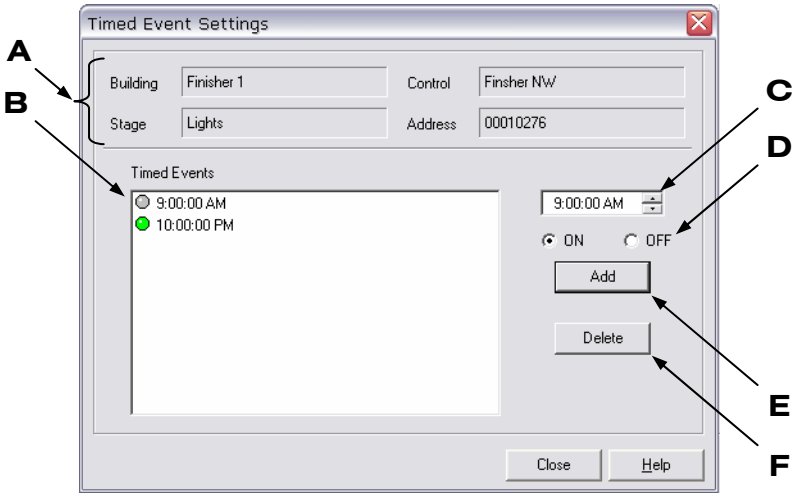
To program temperature-based duty cycles

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and stage you want to program and then click **Adjust**. The Relay Stage Settings window appears.
3. Above Set Point, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
4. Beside Duty Cycle Enabled, place (click) a check in the check box.
5. Under Open Relay Settings, beside Run Time, click and drag the slider to the desired duration. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
6. Under Open Relay Settings, beside Idle Time, click and drag the slider to the desired duration. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
7. Repeat steps 5 and 6 for the close relay settings.
8. Click **OK** to return to the Settings Manager.

Programming timed events

Timed event relays control equipment such as lights that need to be switched ON or OFF during certain times of the day. Before setting up the timed events, make sure you have properly configured the relays. For more information, see **Configuring relays for timed events** on page 39.

Programming timed events means setting the 'on' and 'off' times. Timed events must occur in pairs. This means that every time you set a relay to switch on (an on time), you must set a time for it to switch off (off time).



A This is information about the stage and its control.

B This is a list the timed events for the relay. A green indicator is an 'ON' event; a gray indicator is an 'OFF' event.

C This is the event time. You can adjust the time by clicking the up or down arrow.

D These options allow you to select whether the event switches the relay on or off.

E This button adds the event for the time in the spin box.

F This button deletes a selected event from the Timed Events list.

To program timed events

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and relay you want to program and then click **Adjust**. The Timed Event Settings window appears.
3. In the spin box, click on the hour and then click the up or down arrow to adjust the hour. Repeat for the minutes and AM/PM.
4. Select ON to have the relay switch on at that time, or OFF to have it switch off.
5. Click **Add**.
   The event appears in the Timed Events list.
6. Repeat steps 3 to 5 for each event you want to add.
7. Click **OK** to return to the Settings Manager.

Retroactive events start when you exit the menu. For example, if you set an event to switch ON at 9:00 AM and OFF at 6:00 PM and the event was added to the control at 10:00 AM, the relay switches ON when you exit the Timed Event menu.

To remove timed events

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and relay you want to program and then click **Adjust**. The Timed Event Settings window appears.
3. Under Timed Events, select the event you want to remove and then click **Delete**.
4. Repeat step 3 for each event you want to remove.
5. Click **OK** to return to the Settings Manager.

To edit timed events

You cannot edit timed events with SupraWare, you must either delete the timed events and then add them again, or follow the instructions in the **Supra user manual** to edit the events at the control.

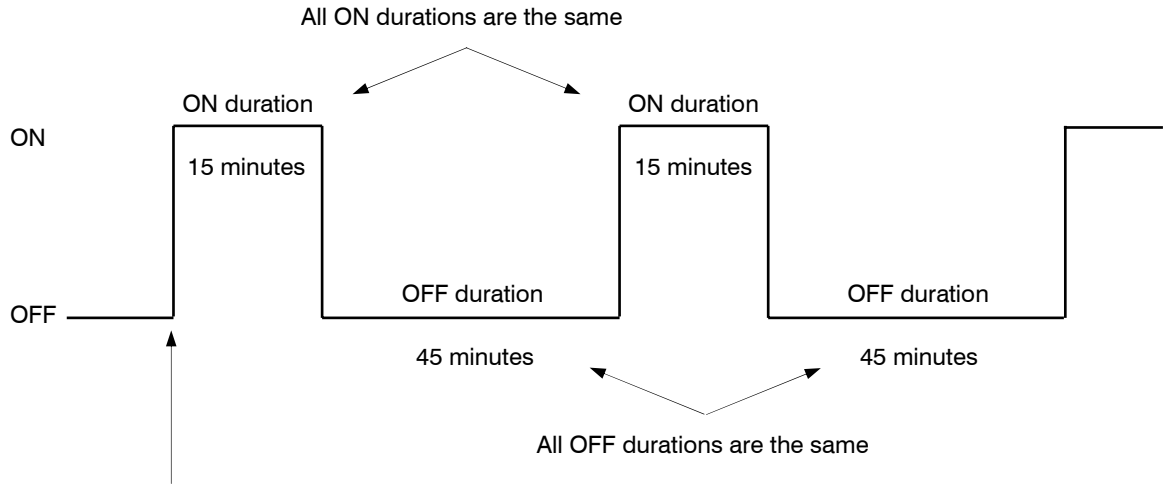
Programming time-based duty cycles

Time-based duty cycles are a cross between temperature-based duty cycles and timed events. Unlike temperature-based duty cycles, time-based duty cycles occur between certain hours of the day, regardless of temperatures.

Setting up a time-based duty cycles means setting the ON and OFF durations and the 'from' time (start time) and the 'to' time (end time). Before setting up the time-based duty cycles, make sure you have properly configured the relays. For more information, see **Configuring relays for time-based duty cycles** on page 37.

How time-based duty cycles work

The relay does not switch on until the 'From' time (start time). Between the start time and the 'To' time (end time), the relay switches on for the ON duration and then OFF for the off duration. When the time reaches the end time, the relay switches off (if it is not off already) and does not switch on again until the time reaches the start time.



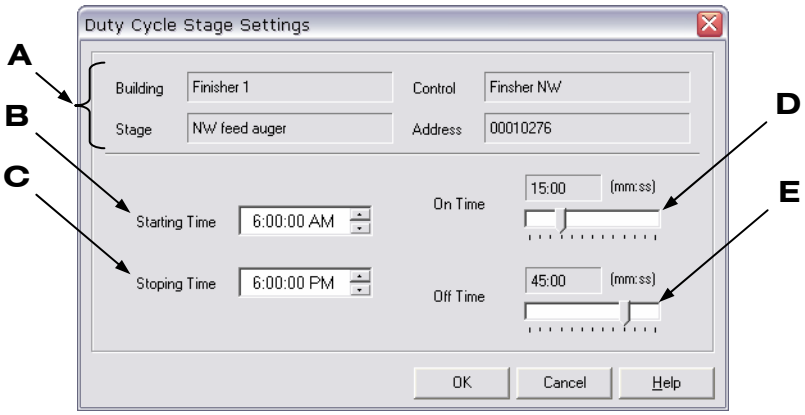
The relay does not switch on until the 'from' time (start time).

The relay switches off (if it is not off already) at the 'to' time (end time) and does not switch on again until the time reaches the start time.

For example, you can have a feed auger run for 15 minutes and then stop for 45 minutes between 6:00 AM and 8:00 PM. In other words, "Between 6:00 AM and 8:00 PM, I want the feed auger ON for 15 minutes, OFF for 45 minutes, ON for 15 minutes… and so on."

This section explains how to set up time-based duty cycles. If you want to set up temperature-based duty cycles (duty cycles that operate for specific durations while the temperature is above or below a certain value), see **Programming heating and cooling elements and temperature-based duty cycles** on page 61.

If you want to set up elements that turn on and off at specific times, see **Programming timed events** on page 64.



A This is information about the stage and its control.

B This is the starting time (called the 'From' time on the Supra). You can adjust the time by selecting the hours, minutes, or AM/PM and then clicking the up or down arrow.

C This is the stopping time (called the 'To' time on the Supra). You can adjust the time by selecting the hours, minutes, or AM/PM and then clicking the up or down arrow.

D This is the on time for the duty cycle. You can adjust the duration by clicking and dragging the slider left or right.

E This is the off time for the duty cycle. You can adjust the duration by clicking and dragging the slider left or right.

To program time-based duty cycles

1. Open the Settings Manager.
2. Expand the site tree and select the Supra and stage you want to program and then click **Adjust**. The Duty Cycle Stage Settings window appears.
3. Beside Starting Time, click on the hour and then click the up or down arrow to adjust the hour. You can also use the up or down keys on your keyboard to adjust the time. Repeat for the minutes and AM/PM.
4. Beside Stopping Time, click on the hour and then click the up or down arrow to adjust the hour. You can also use the up or down keys on your keyboard to adjust the time. Repeat for the minutes and AM/PM.
5. Beside On Time, click and drag the slider to the desired duration. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
6. Beside Off Time, click and drag the slider to the desired duration. You can also left click the slider and then use the right or left arrows on your keyboard to adjust the value.
7. Click **OK** to return to the Settings Manager.

Programming alarms

The alarm settings for your Supra determine which alarm conditions are enabled, which are disabled, and their settings. All these work together to determine how and when the alarm relay activates (in other words, signals an alarm condition).

The alarm relay activates if an alarm condition (one that is enabled) is present for longer than the minimum duration. Minimum duration prevents alarms from activating when the temperature rises or drops for just a few seconds. Minimum duration can be between 0 and 10 minutes. Setting it to 0 activates the alarm relay immediately after an alarm is detected.

Another important setting is alarm silencing. Silencing temporarily disables an alarm setting after an alarm has been acknowledged. This prevents the alarm relay from activating immediately after acknowledging the alarm. If the alarm condition is still present after the silencing period, the alarm relay activates again.

You can set the silencing duration to be from 0 seconds to 30 minutes. If you set it to 0 seconds, acknowledging the alarm will not deactivate the relay; the alarm relay remains active until the alarm condition goes away.

Besides the standard high and low temperature alarms, the Supra has many other alarm conditions. For a complete list and descriptions, see your **Supra user manual**.

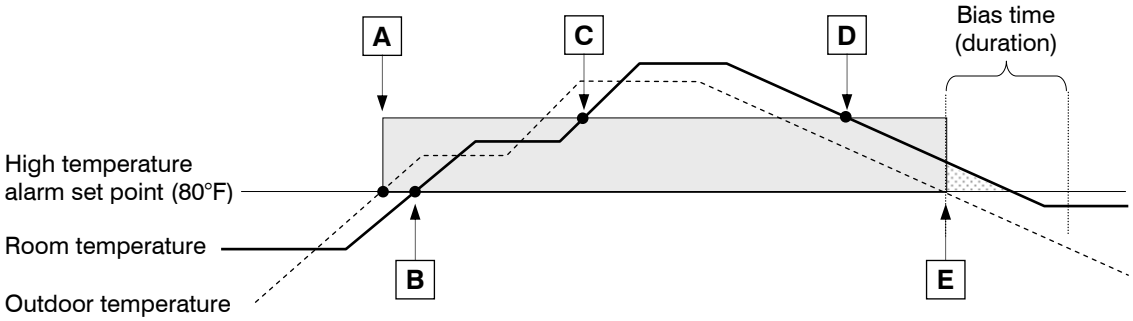
How alarm settings work

Let's say the high temp alarm setting is 85.0°F, the minimum duration is 5 minutes, and the silencing duration is 15 minutes. If the temperature rises to 86 degrees, but drops below 85 degrees 2 minutes later (before the minimum duration of 5 minutes), the alarm relay does not activate.

If the temperature rises to 86 degrees and stays there for 5 minutes, the alarm relay activates. The alarm relay remains active until a user acknowledges the alarm or the temperature drops below the high temp alarm setting. If the temperature remains above the high temp alarm setting, the relay activates again in 15 minutes, after the silencing duration.

How alarm biasing works

The purpose of alarm biasing is to prevent the alarm from sounding on very hot days when the temperature set point cannot be maintained. The bias temperature is added to the high temperature alarm setting if the outdoor temperature is higher than the setting.



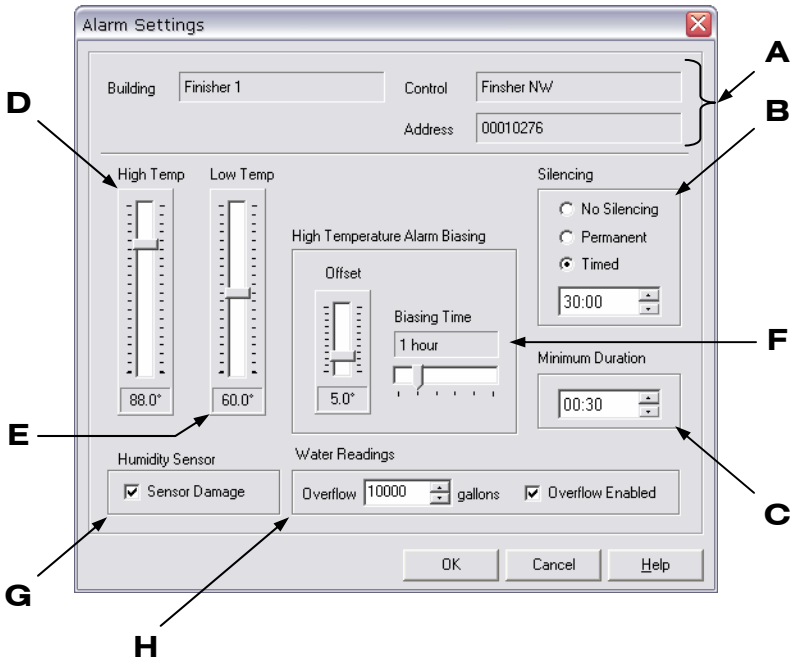
A A bias temperature of 5°F allowed so that the room temperature can rise to 85°F before an alarm occurs.

B The room temperature exceeds the normal alarm temperature. No alarm occurs because the room temperature is lower than the high temperature alarm plus the alarm bias.

C A high temperature alarm occurs because the room temperature exceeds the high temperature alarm plus the alarm bias.

D The alarm condition ends when the room temperature drops below the alarm bias.

E After the outdoor temperature drops below the high temperature set point, the bias remains for the duration of the bias time. This gives the room a chance to cool off before removing the bias.



A This is information about the control.

B These are the alarm silencing settings. You can select the type of silencing and, if you select 'Timed', adjust the duration by selecting the minutes or seconds and then clicking the up or down arrow.

C This is the minimum duration. You can adjust the duration by selecting the minutes or seconds and then clicking the up or down arrow.

D This is the high temperature. You can adjust the temperature by clicking and dragging the slider up or down.

E This is the low temperature. You can adjust the temperature by clicking and dragging the slider up or down.

F These are the high temperature biasing settings. You can adjust the temperature offset by clicking and dragging the slider up or down. You can adjust the duration by clicking and dragging the slider left or right.

G This option allows you to enable or disable the sensor damage alarm for the humidity sensor.

H These are the water overflow settings. You can enable or disable the overflow alarm by selecting or deselecting the check box. You can adjust the maximum daily flow by typing a number in the box or clicking the up or down arrow.

To program alarms

1. Open the Settings Manager.
2. Expand the site tree and select the Supra you want to program.
3. Beside Alarm Settings, click **Adjust**.
   The Alarm Settings window appears.
   - To adjust alarm silencing: below Silencing, select one of the options. If you selected 'Timed', select the minutes or seconds and then click the up or down arrow to adjust the value.
   - To adjust the high temperature alarm: below High temp, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
   - To adjust the low temperature alarm: below Low Temp, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
   - To adjust alarm biasing:
     - Below Offset, click and drag the slider to the desired temperature. You can also left click the slider and then use the up or down arrows on your keyboard to adjust the value.
     - Below Biasing Time, click and drag the slider to the desired duration. You can also left click the slider and then use the left or right arrows on your keyboard to adjust the value.
   - To enable or disable the humidity sensor alarm: select (check) or deselect (uncheck) the Sensor Damage box.
   - To enable or disable the water overflow alarm: select (check) or deselect (uncheck) the Overflow Enabled box.
   - To adjust the water overflow alarm: beside Overflow, type a number in the box or click the up or down arrow.
4. Click **OK** to return to the Settings Manager.

Your Supra has other alarms and alarm settings, but you cannot adjust them from SupraWare. For more information about these settings, see your **Supra user manual**.

Chapter 5: Monitoring your site

This chapter explains how to monitor your site after you have configured and programmed your Supras.

- Monitoring the status of your site
- Creating reports and charts
- Backing up, restoring, and purging data

Monitoring the status of your site

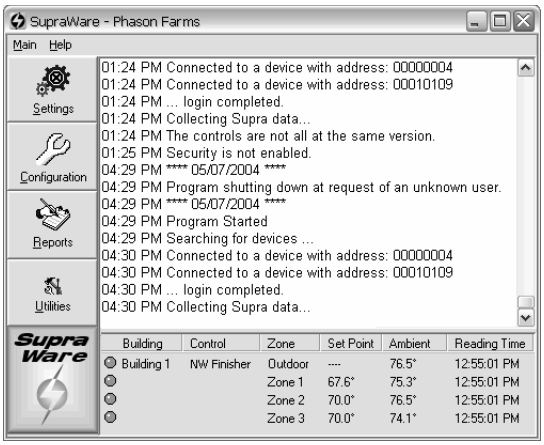
SupraWare constantly collects information about your site and has several tools you can use to monitor its status. These tools include the main Communication Centre window, the Diagnostics tab in the Utilities Manager, and the charts and reports in the Reports Manager.

SupraWare must always be running. The software collects, displays, and stores information only when it is running. When SupraWare is not running, your Supras will function according to their settings, but new settings cannot be sent.

Monitoring the Communication Center

The Communication Center is the main window for SupraWare and displays information about the system and the Supras connected to it. This information includes:

- Status information—for example, current temperatures, humidity
- Audit information—for example, system changes, configuration changes, program startup or shutdown
- Alarm information—for example, high temperature, actuator jam


SupraWare - Phason Farms
Main Help
Settings
Configuration
Reports
Utilities
SupraWare
01:24 PM Connected to a device with address: 00000004
01:24 PM Connected to a device with address: 00010109
01:24 PM ... login completed.
01:24 PM Collecting Supra data...
01:24 PM The controls are not all at the same version.
01:25 PM Security is not enabled.
04:29 PM **** 05/07/2004 ****
04:29 PM Program shutting down at request of an unknown user.
04:29 PM **** 05/07/2004 ****
04:29 PM Program Started
04:29 PM Searching for devices ...
04:30 PM Connected to a device with address: 00000004
04:30 PM Connected to a device with address: 00010109
04:30 PM ... login completed.
04:30 PM Collecting Supra data...
Building Control Zone Set Point Ambient Reading Time
Building 1 NW Finisher Outdoor ---- 76.5° 12:55:01 PM
Zone 1 67.6° 75.3° 12:55:01 PM
Zone 2 70.0° 76.5° 12:55:01 PM
Zone 3 70.0° 74.1° 12:55:01 PM

Check the Communication Center regularly; this helps ensure all your controls are functioning normally and lets you know if there are problems or potential problems in a building, room, or zone.

Some things to look for in the Communication Center, and the Diagnostic display in the next section, include:

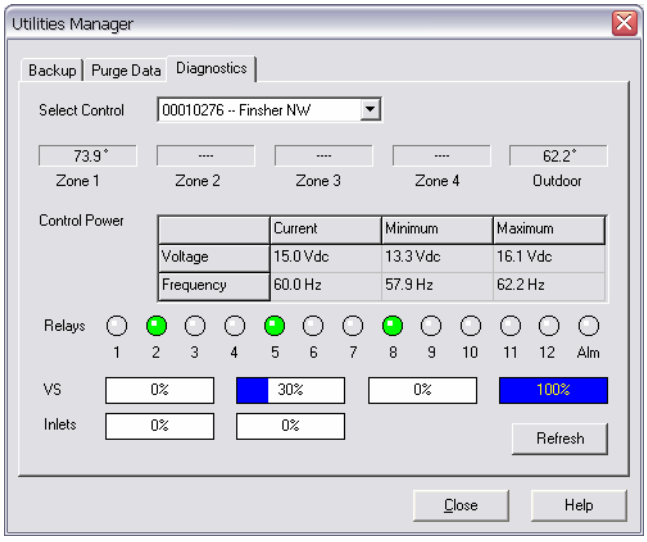
- Are any temperatures approaching high or low limits that would set off an alarm if left unchecked?
- Is your power remaining steady?
- Are your Supras and computer communicating correctly and consistently?
- Are there large swings in the temperatures recorded by your Supra? You might need to check the settings.
- Is all equipment working as intended or as you expected?
- Has your Supra logged an unusual number of alarms? To find out, check the reports.

If you think there might be a problem, you can take steps to avoid the problem, prepare ahead of time to react to the problem, or adjust your Supra settings to compensate for the problem. You might want to set up a regular maintenance schedule to check different mechanical and electronic connections.

Monitoring the Diagnostics display

Another important tool for monitoring your site is the diagnostic display in the Utilities Manager. The Diagnostic display shows more-detailed information than the Communication Center, but for only one Supra at a time.

The diagnostic display shows important information about what is happening with a Supra, the equipment connected to them, and the environmental conditions in your building.



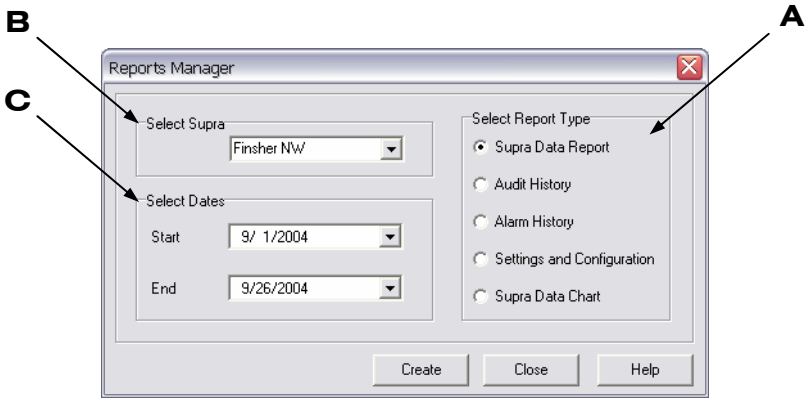
As with the Communication Center, check the Diagnostic display regularly to ensure all your Supras are functioning normally.

Creating reports and charts

SupraWare has four reports and one chart:

- Supra Configuration Report
- Supra Data Report
- Audit History Report
- Alarm History Report
- Supra Data Chart

The Reports Manager is where you create reports and charts.



A These allow you to select the type of report or chart.

B This box allows you to select a Supra, if the report requires one.

C These boxes allow you to select a date range if the report requires one.

The table below shows what you need to select for each report.

Report	You need to select...
Supra Data Report	A Supra and a date range
Audit History Report	A date range
Alarm History Report	A date range
Supra Configuration Report	A Supra
Supra Data Chart	A Supra and a date range

Creating reports

SupraWare's reports are in HTML format. You can view and print HTML reports using your web browser, e-mail them to a person outside the building, or save them on a disk to take to a different computer.

Supra Data Report

The Supra Data Report displays environmental data for a Supra, sorted by date. The number of readings for each day depends on the data recording interval. For more information, see **Configuring your farm information** on page 26.

Supra Report

Supra: Finsher NW
Report Dates: 17-Sep-2004 to 22-Sep-2004
Report Created: 07-Oct-2004

All temperatures in degrees Fahrenheit
Water usage in US Gallons
Relative humidity in percent
Amb. ambient temperature **Set** set point temperature

Information about the Supra and the report

17-Sep-2004

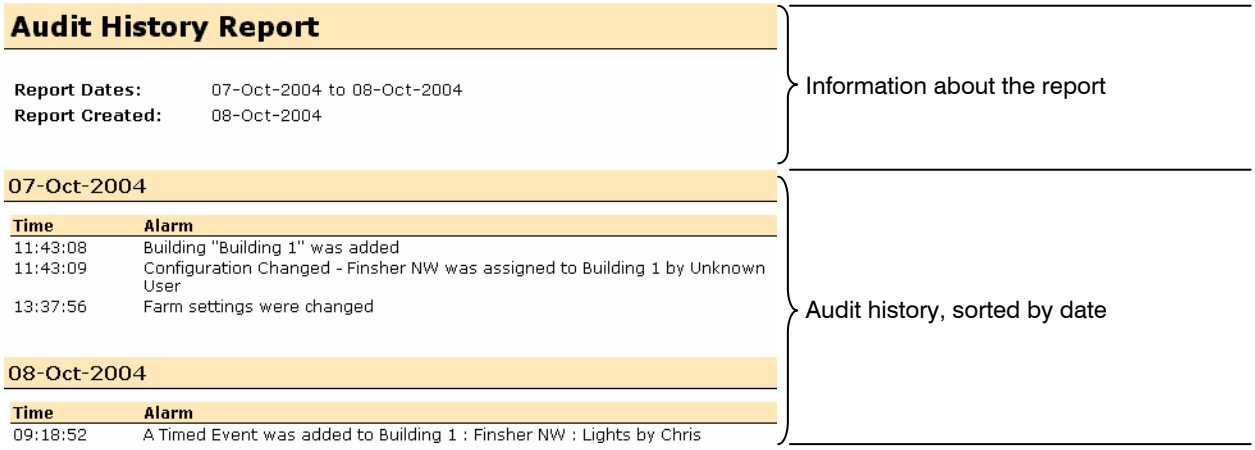
Time	Zone 1 Amb./Set	Zone 2 Amb./Set	Zone 3 Amb./Set	Zone 4 Amb./Set	Outdoor	Humidity	Water
00:00:12	79.0 / 84.9	73.2 / 84.9	--- / ---	--- / ---	66.0	68	2
00:10:12	78.8 / 84.9	73.2 / 84.9	--- / ---	--- / ---	66.8	69	4
00:20:12	78.8 / 84.9	73.2 / 84.9	--- / ---	--- / ---	66.8	69	6
00:30:12	78.8 / 84.9	73.2 / 84.9	--- / ---	--- / ---	66.8	68	6
00:40:12	78.8 / 84.9	73.2 / 84.9	--- / ---	--- / ---	66.8	69	12
00:50:12	78.8 / 84.9	73.2 / 84.9	--- / ---	--- / ---	66.8	67	16
01:00:11	78.8 / 84.9	73.2 / 84.9	--- / ---	--- / ---	66.8	68	18
01:10:11	78.6 / 84.9	73.0 / 84.9	--- / ---	--- / ---	66.7	69	21
01:20:11	78.6 / 84.9	73.0 / 84.9	--- / ---	--- / ---	66.7	66	28
01:30:11	78.6 / 84.9	73.0 / 84.9	--- / ---	--- / ---	66.8	67	31

Environmental data, sorted by date

Audit History Report

The Audit History Report displays a list of changes to your SupraWare system, sorted by date. The report adds an entry each time there is a change to the configuration or settings, and each time the program is stopped or started.

If you have security enabled, the information includes the name of the user who made the change. If you do not have security enabled, 'Unknown User' is displayed. For more information about security, see **About SupraWare and security** on page 19.



Audit History Report

Report Dates: 07-Oct-2004 to 08-Oct-2004
Report Created: 08-Oct-2004

Information about the report

07-Oct-2004

Time	Alarm
11:43:08	Building "Building 1" was added
11:43:09	Configuration Changed - Finsher NW was assigned to Building 1 by Unknown User
13:37:56	Farm settings were changed

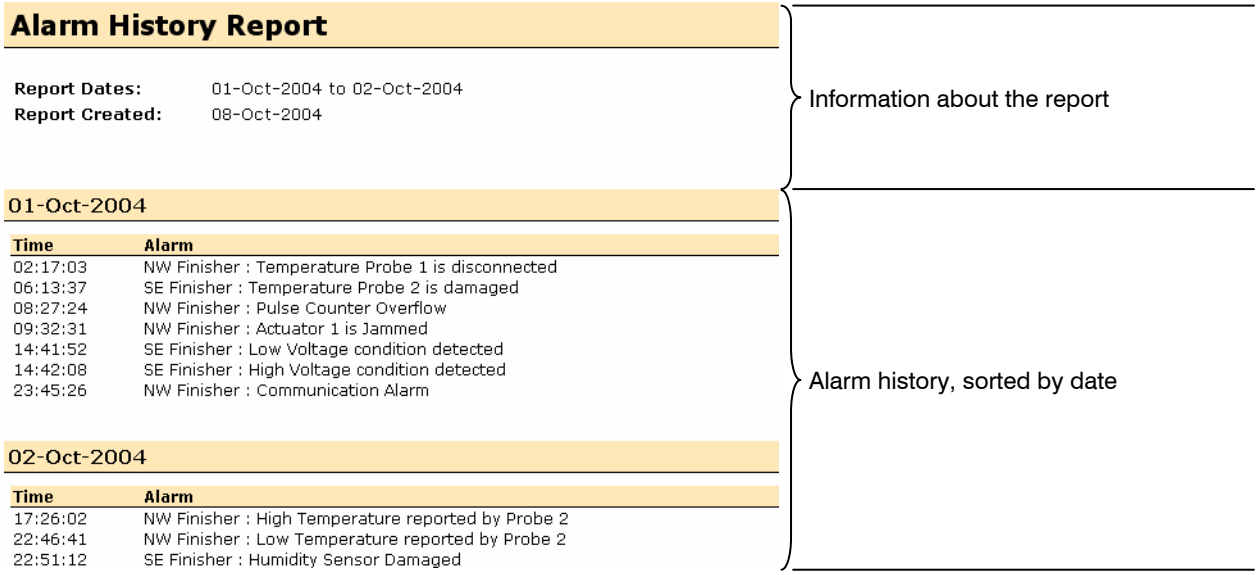
08-Oct-2004

Time	Alarm
09:18:52	A Timed Event was added to Building 1 : Finsher NW : Lights by Chris

Audit history, sorted by date

Alarm History Report

The Alarm History Report displays a list of all the alarm conditions reported for your SupraWare system, sorted by date. The report adds an entry each time there is an alarm condition. The entry includes the name of the Supra that reported the alarm and a description of the condition.



Alarm History Report

Report Dates: 01-Oct-2004 to 02-Oct-2004
Report Created: 08-Oct-2004

Information about the report

01-Oct-2004

Time	Alarm
02:17:03	NW Finisher : Temperature Probe 1 is disconnected
06:13:37	SE Finisher : Temperature Probe 2 is damaged
08:27:24	NW Finisher : Pulse Counter Overflow
09:32:31	NW Finisher : Actuator 1 is Jammed
14:41:52	SE Finisher : Low Voltage condition detected
14:42:08	SE Finisher : High Voltage condition detected
23:45:26	NW Finisher : Communication Alarm

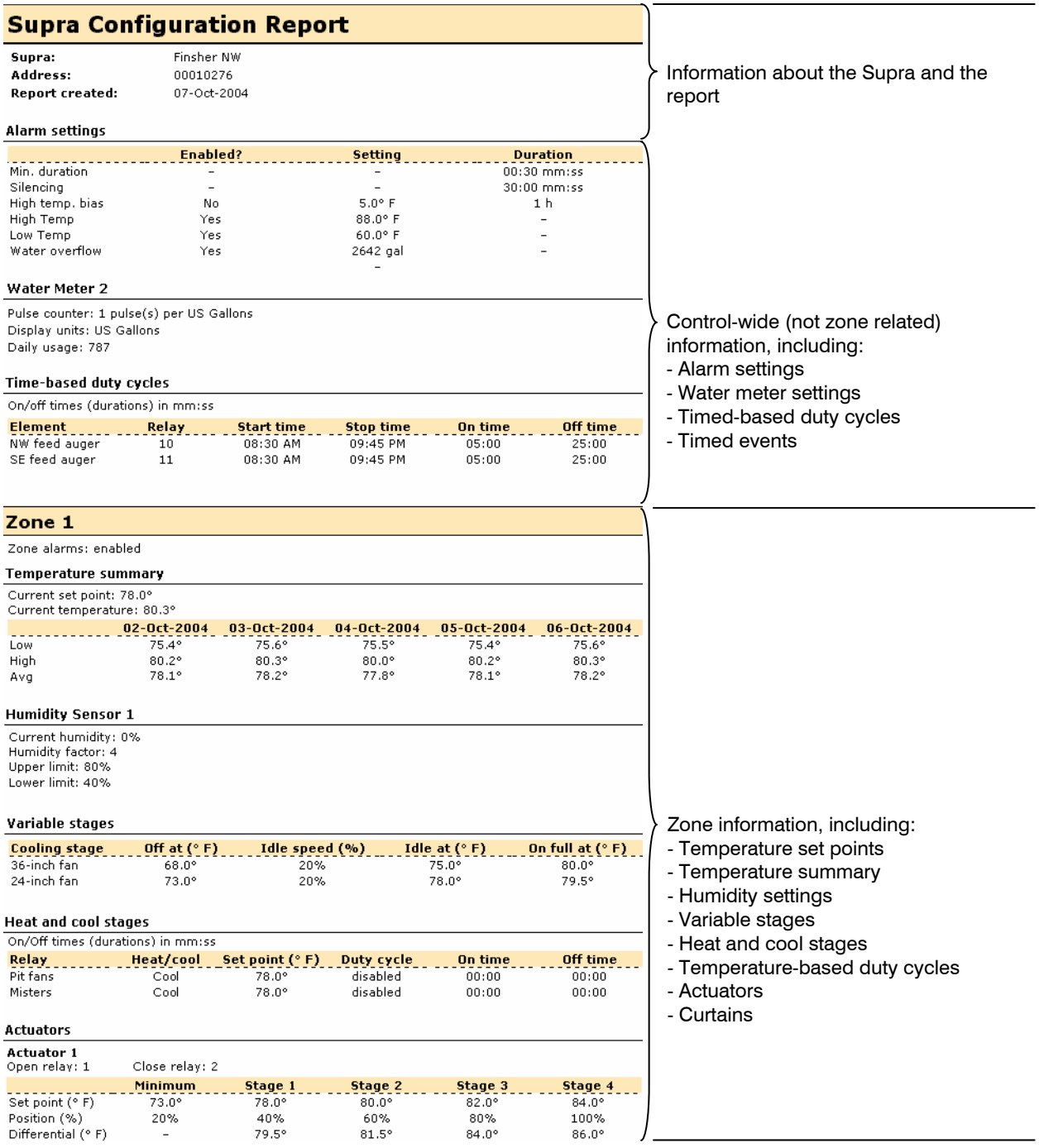
02-Oct-2004

Time	Alarm
17:26:02	NW Finisher : High Temperature reported by Probe 2
22:46:41	NW Finisher : Low Temperature reported by Probe 2
22:51:12	SE Finisher : Humidity Sensor Damaged

Alarm history, sorted by date

Supra Configuration Report

The Supra Configuration Report lists the settings and configuration for a Supra.



Supra Configuration Report

Supra: Finsher NW
Address: 00010276
Report created: 07-Oct-2004

Information about the Supra and the report

Alarm settings

	Enabled?	Setting	Duration
Min. duration	-	-	00:30 mm:ss
Silencing	-	-	30:00 mm:ss
High temp. bias	No	5.0° F	1 h
High Temp	Yes	88.0° F	-
Low Temp	Yes	60.0° F	-
Water overflow	Yes	2642 gal	-
		-	

Water Meter 2

Pulse counter: 1 pulse(s) per US Gallons
Display units: US Gallons
Daily usage: 787

Time-based duty cycles

On/off times (durations) in mm:ss

Element	Relay	Start time	Stop time	On time	Off time
NW feed auger	10	08:30 AM	09:45 PM	05:00	25:00
SE feed auger	11	08:30 AM	09:45 PM	05:00	25:00

Control-wide (not zone related) information, including:
- Alarm settings
- Water meter settings
- Timed-based duty cycles
- Timed events

Zone 1

Zone alarms: enabled

Temperature summary

Current set point: 78.0°
Current temperature: 80.3°

	02-Oct-2004	03-Oct-2004	04-Oct-2004	05-Oct-2004	06-Oct-2004
Low	75.4°	75.6°	75.5°	75.4°	75.6°
High	80.2°	80.3°	80.0°	80.2°	80.3°
Avg	78.1°	78.2°	77.8°	78.1°	78.2°

Humidity Sensor 1

Current humidity: 0%
Humidity factor: 4
Upper limit: 80%
Lower limit: 40%

Variable stages

Cooling stage	Off at (° F)	Idle speed (%)	Idle at (° F)	On full at (° F)
36-inch fan	68.0°	20%	75.0°	80.0°
24-inch fan	73.0°	20%	78.0°	79.5°

Heat and cool stages

On/Off times (durations) in mm:ss

Relay	Heat/cool	Set point (° F)	Duty cycle	On time	Off time
Pit fans	Cool	78.0°	disabled	00:00	00:00
Misters	Cool	78.0°	disabled	00:00	00:00

Actuators

Actuator 1
Open relay: 1 Close relay: 2

	Minimum	Stage 1	Stage 2	Stage 3	Stage 4
Set point (° F)	73.0°	78.0°	80.0°	82.0°	84.0°
Position (%)	20%	40%	60%	80%	100%
Differential (° F)	-	79.5°	81.5°	84.0°	86.0°

Zone information, including:
- Temperature set points
- Temperature summary
- Humidity settings
- Variable stages
- Heat and cool stages
- Temperature-based duty cycles
- Actuators
- Curtains

To create reports

1. Open the Reports Manager.
2. Below Type, select a type of report.
3. If required, below Supra, select a control.
4. If required, below Dates, select start and end dates. For more information, see **Selecting dates** below.
5. Click **Create**.

Unless you select a different directory, SupraWare saves reports to `C:\Program Files\SupraWare\`

Selecting dates

SupraWare uses the standard Windows date selector for selecting dates.

To select dates

1. Click on the date drop-down box.
   The calendar appears.

2. Select the date:
   - To move forward and backward through the months, click or .
   - To select a specific month, click the current month and then select the month you want.
   - To move forward or backward through the years, click the year on the calendar and then click or .
   - To select a date, select the number on the calendar.

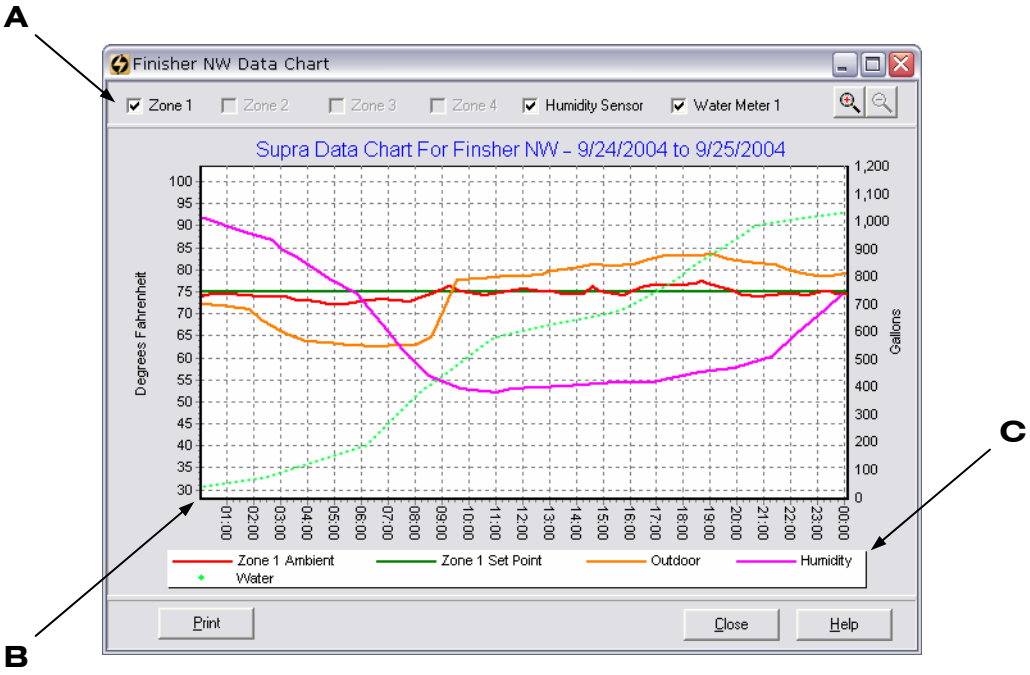
Creating charts

Supra Data Charts are versatile charts that display historical conditions for a Supra. The chart automatically displays outdoor temperatures (if a probe is installed) and allows you to display the following:

- Ambient and set-point temperatures for zones 1 to 4 (if probes are installed)
- Humidity (if a sensor is installed)
- Water usage (if a water meter is connected)

This versatility allows you to compare different types of data on a single chart. For example, you can compare temperature and humidity values. The ability to compare the humidity and temperature information can help you develop and maintain an effective ventilation strategy and could have a positive effect on herd health.

The Supra Data Chart is a line chart. You can view and print charts. You must have at least one hour of data to display a chart.



A These check boxes allow you to select which data you want in your chart. If a selection is not available, then the selected Supra does not have that data type.

B This is the chart for the date range you selected. Each colored line represents a data type. The left axis is for temperatures and relative humidity; the right axis is for water usage. The bottom displays dates or times.

C This is the legend for the chart; it shows the data type each colored line represents.

To create Supra charts

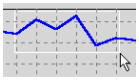
1. Open the Reports Manager.
2. Below Type, select Supra Data Chart.
3. Below Supra, select the control for which you want to create the chart.
4. Below Dates, select start and end dates for the chart. For more information, see **Selecting dates** on page 80.
5. Click **Create**.
   SupraWare displays your chart.

Zooming and panning charts

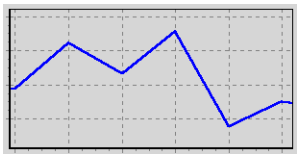
You can zoom in on or pan (scroll along) a chart. This is useful if you have a chart that covers a large date range and you want to zoom in on a specific day or smaller date range.

To zoom in on charts

1. Click and drag to select the area you want to magnify.



2. Release the mouse button.
   The chart magnifies the area you selected.



To zoom out from charts

Click on the chart and drag to the top-left and then release the mouse button. The chart returns to normal magnification.

To pan charts

Right-click the chart and drag the mouse in the direction you want the chart to move.

Backing up, restoring, and purging data

The Utilities Manager has tools for backing up, restoring, and purging your data files. Performing these tasks on a regular basis is like 'house cleaning' for your SupraWare system; they keep your system in a good, working, and organized state.

Backing up and restoring configuration and settings

Backing up data means copying it to a floppy disk, CD, or other removable storage device. You should make backups regularly, once a month for example, and store them in an off-site location.

Restoring data means copying it from the backup device to the SupraWare data directory. You should restore data only in emergency situations, such as computer failure or loss.

When SupraWare backs up data, it backs up *only* the configuration and settings; it *does not* back up historical data such as temperatures, alarm history, and so on.

If you want to back up historical data, copy all the files in the `C:\Program Files\SupraWare` directory that have a `.log` or `.swd` extension to a floppy disk, CD, or other removable storage device.

To back up configuration and settings

1. Open the Utilities Manager.
2. Click **Backup**.
   The Save As dialog appears.
3. Select a location for the backup file and then click **OK**.
   SupraWare compresses and saves your backup file.

To back up configuration and settings

1. Open the Utilities Manager.
2. Click **Restore**.
   The Open dialog appears.
3. Select the location of your backup file and then click **OK**.
   SupraWare restores your configuration and settings from your backup file.

Purging data

Purging data is the 'house cleaning' of the SupraWare system. As your system runs, it constantly collects data and stores it in files. After time, these files can get quite large. Purging data basically removes older data (you select how old) from the files.

You should purge data regularly to keep your system running smoothly. A good recommendation would be every three months to purge data older than one year.

To purge data

1. Open the Utilities Manager and then select the Purge Data tab.
2. Beside Purge…Prior to, select a date. For more information, see **Selecting dates** on page 80.
3. Verify you have selected the date you want and then click **Purge**.
   A confirmation window appears.
4. To purge the data, click **Yes**. To cancel, click **No**.

Glossary

actuator

A device that has a mechanical arm that extends and retracts. Actuators are used for control elements that are not OFF or ON. Instead, they vary by a percentage. For example, inlets can be opened various distances from 0 percent to 100 percent.

Typically, linear actuators are connected directly to the inlets, or by cables and pulleys. Inlets are generally located in the ceiling or walls. Inlet systems are usually spring loaded to aid in closing the inlet, or counter weighted to aid in opening the inlets.

actuator-stage set point

While the temperature is below the minimum set point, the actuator is closed. When the temperature rises to the minimum set point, the actuator moves to the minimum position.

As the temperature rises, the actuator has four stages it moves through until it reaches its maximum open position. This method lets you gradually open inlets instead of fully opening them when the temperature rises above a single set point.

In other words, "when the temperature is here (stage set point), I want the actuator to start opening. When the temperature reaches here (stage differential), I want the actuator to be at this position (stage position) percent."

For more information, see **Programming actuators** on page 55.

alarm bias

The purpose of alarm biasing is to prevent the alarm from sounding on very hot days when the temperature set point cannot be maintained. Bias temperature is added to the high temperature alarm setting if the outdoor temperature is higher than the High temp alarm setting.

For more information, see **Programming alarms** on page 69.

alarm silencing

Alarm silencing temporarily disables an alarm setting after an alarm has been acknowledged. This prevents the alarm relay from activating immediately after acknowledging the alarm if the condition is still present.

For more information, see **Programming alarms** on page 69.

control elements

Control elements are devices connected to your Supra, such as fans, heaters, actuators, and so on.

curtain idle band

Curtain idle band is the buffer (in °F or °C) around the set point within which the curtains hold their position. When the temperature is outside of the band, the curtain starts cycling open or closed. Idle band is one of six curtain settings.

For more information, see **Programming curtains** on page 58.

curtain set point

Curtain set point is the temperature at which the curtain holds its position. When the temperature is between the set point and the idle band limits, the curtain holds its position. Set point is one of six curtain settings.

For more information, see **Programming curtains** on page 58.

differential

For variable stages, differential is the difference (in degrees) between the 'idle at' (or set point) temperature and the 'on full at' temperature.

For more information, see **Programming variable stages** on page 51.

duty cycle

See *time-based duty cycle* or *temperature-based duty cycle*.

firmware

The internal program instructions of your Supra. It comprises all the menus, displays, and more.

You can update the firmware version of your Supra to the latest version using an Intaglio. For more information, see your **Supra user manual**.

growth curve

A growth curve is an extension of the group set point concept. The growth curve automatically adjusts the temperature set points over time to control the temperature in a room or zone. It is called a 'growth' curve because it adjusts the set-points as the animals 'grow'.

For more information, see **Programming growth curves** on page 45.

humidity band

The humidity range in which your Supra attempts to compensate for humidity. The band consists of a lower and upper limit.

For more information, see **Programming the humidity** on page 49.

humidity compensation

The adjustment your Supra makes to compensate for high humidity levels.

For more information, see **Programming the humidity** on page 49.

humidity factor

The amount of effect on the ventilation rate at high humidity levels; 0 is little effect, while 10 is full effect.

For more information, see **Programming the humidity** on page 49.

humidity zone

The zone the humidity sensor (if connected) is assigned to. A humidity sensor can be assigned to only one zone.

For more information, see **Selecting a humidity zone** on page 40.

hysteresis

Hysteresis helps prevent damage to the relays, variable stages, and the equipment connected to them by preventing the stages from switching on and off rapidly when the temperature is hovering close to the set point. For example, a household thermostat might turn on a furnace at 68 °F when the house is cooling down, but turn it off at 72 °F when the house is warming up. The difference between these two values is the hysteresis.

For more information, see your **Supra user manual**.

idle at	The temperature at which a variable cooling stage is at its minimum speed. For more information, see **Programming variable stages** on page 51.
idle speed	The speed, in percentage of full speed, a variable stage fan is at when the temperature in the zone is between the "off at" and "idle at" temperatures. For more information, see **Programming variable stages** on page 51.
inlets	Inlets are shutter-like devices mounted on a wall or ceiling that are used to control air flow in a building.
inlet actuator	See *actuator*.
minimum duration	Minimum duration is the minimum amount of time an alarm condition must be present before the Supra signals an alarm. Minimum duration prevents alarms from activating when the temperature rises or drops for just a few seconds. For more information, see **Programming alarms** on page 69.
minimum idle	The slowest speed at which a variable speed fan can safely idle. It is used to establish minimum air movement (sometimes called minimum ventilation).
minimum position	The percentage an actuator will be open when the temperature is at the minimum set point. For more information, see **Programming actuators** on page 55.
minimum set point	The temperature at which an actuator is at its minimum position, and below which an actuator closes completely. For more information, see **Programming actuators** on page 55.
off at	For variable cooling stages, the fan is off at and below this temperature. For variable heating stages, the heat mat is off at and above this temperature. For more information, see **Programming variable stages** on page 51.
on full at	For variable cooling stages, the fan is on full (100% speed) at and above this temperature. For variable heating stages, the heat mat is on full at and below this temperature. For more information, see **Programming variable stages** on page 51.
pulse counter	An electronic counter that counts the number of electric pulses (switch closures). The Supra's pulse counter can count the electronic pulses emitted by a water meter with pulse output.

relative humidity

Relative humidity is the quantity of water vapor the air contains compared to the maximum amount it can hold at that particular temperature.

For example, a relative humidity of 60% means the air contains 60% of the maximum moisture it can contain at the present temperature. The warmer the air, the more moisture the air can hold.

relay

An electromagnetic switch that is either on (closed) or off (open).

set point, temperature

The temperature at which a stage switches on or off. A cooling stage switches on when the temperature rises above the set point. A heating stage switches on when the temperature drops below the set point.

For more information, see **Programming heating and cooling elements and temperature-based duty cycles** on page 61.

See also *actuator-stage set point*, *curtain set point*, and *variable-stage set point*.

silencing

See *alarm silencing*.

spikes

Short-term deviations or changes from a desired voltage level or signal. These deviations can cause damage to electronic devices, or cause them to malfunction. Spikes are often caused by sudden excess power, also known as 'power surges', or by drops in power, know as 'brown outs'.

For more information, see **Understanding power surges and surge suppression** on page 8.

temperature-based duty cycle

A temperature-based style of controlling heating or cooling elements using 'on durations' and 'off durations'. Temperature-based duty cycles are often used to control misters.

For cooling elements, when the temperature is below the set point, the cooling element is off. When the temperature rises above the set point, the element switches on for the 'on duration' and then off for the 'off duration'. If at any time the temperature drops below the set point, the duty cycle relay switches off and will not switch on again until the temperature rises above the set point.

For heating elements, when the temperature is above the set point, the heating element is off. When the temperature drops below the set point, the element switches on for the 'on duration' and then off for the 'off duration'. If at any time the temperature rises above the set point, the duty cycle relay switches off and will not switch on again until the temperature drops below the set point.

For more information, see **Programming heating and cooling elements and temperature-based duty cycles** on page 61.

time-based duty cycle

A time-based style of controlling heating or cooling elements using 'on durations' and 'off durations' between certain hours of the day. Time-based duty cycles are often used to control feed augers.

For more information, see **Programming time-based duty cycles** on page 66.

timed event

A time-based style of controlling elements using 'on times' and 'off times'. Timed events are often used to control equipment such as lights that need to be switched on or off during certain times of the day.

For more information, see **Programming timed events** on page 64.

UPS

Uninterruptible power supply. A device that ensures that power to electrical devices, such as a computer, is not interrupted because of a blackout (power failure) and usually protects the computer against potentially damaging events, such as power surges and brownouts. All UPS units are equipped with a battery and a loss-of-power sensor; if the sensor detects a loss of power, it switches over to the battery so that the user has time to save his or her work and shut off the computer.

variable stage set point

The temperature at which a variable heating stage is at its minimum output.

For more information, see **Programming variable stages** on page 51.

See also *idle at*.

zone

A zone defines an area set off as distinct from surrounding or adjoining parts. Zones might or might not be separated by walls. For example, a large room could be divided into two zones to provide better control response.

For more information, see **Understanding the structure and configuration of your site** on page 22.

zone set point

A zone set point is the desired or target temperature for a zone. The individual set points for each variable and relay stage will be adjusted relative to the set point for that zone.

For more information, see **Setting the zone set point** on page 44.

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